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The Future of Work in the Context of Population Ageing in Asia and the Pacific

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Acronyms and abbreviations

ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
AfDB	African Development Bank Group
EBRD	European Bank for Reconstruction and Development
ESCAP	Economic and Social Commission for Asia and the Pacific
GDP	gross domestic product
ICT	information and communications technology
IDB	Inter-American Development Bank
ILO	International Labour Organization
SDG	Sustainable Development Goal
TFR	total fertility rate

Abstract

The populations in Asia and the Pacific are ageing, with changes in age structures that result from past and ongoing fertility reductions and increases in life expectancy. Initially, reductions in fertility increase the share of the population of working age while the share of the older population is still relatively low. Persistent low fertility leads to the situation where the share of the working-age population starts to decrease, while the share of the older population increases. This usually goes along with a shortage of workers in certain fields and a noticeable increase in the number of older persons.

Countries in the Asia-Pacific region are in different phases of population ageing, ranging from contexts with still rather low shares of the population aged 65 years or above to contexts with low fertility and high life expectancy. In countries with persistent low fertility, how to react to labour shortages and to ensure the sustainability of social security systems are fundamental questions. Often-sought remedies to increase labour supply are the reduction of barriers to female labour force participation, increased labour migration and an increase in the length of working lives. Working longer requires age-friendly work environments, that skill demand meets skill supply, and that the health status of older persons allows for longer economic activity. During the next decades, more and more countries in the region will be facing these challenges of their ageing populations. However, their populations are not only ageing; at the same time they are becoming more educated, given past and ongoing shifts in educational attainment towards higher degrees. This significant change has likely far-reaching positive implications for future labour supply and health outcomes.

It is happening while the Fourth Industrial Revolution is taking place. Rapid technological advancement means that some jobs will be replaced by technology, while new jobs will be created. In addition, environmental and climatic changes are shaping the future of work; hence the transition to a green economy is requiring new approaches to production and consumption. Addressing opportunities and challenges of the future of work requires policy responses that adapt to these manifold demographic, economic, technological and environmental changes. These changes are interdependent in many ways and the COVID-19 pandemic has influenced them further. The resilience of persons of any age is key to dealing with such changes and challenges. Since different subgroups of populations show different levels of vulnerability, policies that cater towards their different needs are called for.

The disruptions the COVID-19 pandemic has caused in people's lives, labour markets and the regional economy have aggravated many existing challenges and reversed several development gains. At the same time, the pandemic has sped up ongoing developments when it comes, for example, to digitalization; moreover, there is the opportunity for a "green recovery".

This paper deals with the diverse landscape of demographic and labour market trends in the region, and puts them in context with emerging trends and developments – repercussions of the COVID-19 pandemic, the transition toward a green economy, the Fourth Industrial Revolution and the impact of and responses to climate change and natural disasters. The paper concludes with lessons learned and recommendations on how to move forward toward more inclusive and sustainable labour markets that are prepared for further demographic, economic, technological and environmental changes.

Keywords: Asia and the Pacific; population ageing; future of work; labour supply; labour demand.

1. Introduction

Countries in Asia and the Pacific are rapidly ageing with varying speed and starting from different levels, but the future of the region's population is one in which the average person will be older than today. The number of older persons is expected to more than double by 2050, when one in four people in the region is projected to be 60 years or older. Compared to many other parts of the world, the pace of population ageing is much faster in Asia and the Pacific (ESCAP, 2017a).

With an ageing population, the median age of the labour force in the region is projected to increase from 39.3 years in 2017 to 41.5 years in 2030 (ILO, 2018a). While the demographic situation varies between subregions and countries, more countries will enter the late or post-dividend stage of the demographic transition and the total size of the working-age population (15–64 years) will decrease. An ageing labour force might result in declining productivity gains and slower economic growth, in the case of shrinking savings and increased pressure on public finances, as demand for pensions and health care rises. If not addressed by policies in the respective areas, inequalities between population groups are at risk of increasing.

One way to resolve this issue is to strengthen the labour force participation of older persons. Their participation is guided by the interest of employers to employ older persons, as well as older persons' readiness and interest to continue staying in the labour force. An important prerequisite for longer, productive employment is good health. Furthermore, providing education and training to persons of any age, and in particular older persons, is pertinent in the context of the Fourth Industrial Revolution, where some jobs will be replaced by technology, while new jobs will be created.[1] Rapid technological advancement has the potential to be disruptive to employment flows, creating a perpetual need for workers, especially for those at the medium-skill level, to reskill and upskill. In addition, environmental and climatic changes are shaping the future of work, including for older persons. Overall, addressing opportunities and challenges to the future of work requires policy responses that need to adapt to demographic, economic, technological and environmental changes. These changes are also interdependent in many ways and the COIVID-19 pandemic influences them further.

Many international agreements, plans and initiatives deal with all or a selection of these aspects. For example and most prominently, the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) cover many policy areas that are directly related to population ageing and the future of work. SDG 3 promotes health and well-being of persons of all ages, decent work is a core aspect of SDG 8, and achievements in areas such as quality education for all (SDG 4) and gender equality (SDG 5) can improve individuals' situations throughout the life-course. The actions that are called for in the recent Secretary-General's "Our Common Agenda" aim at accelerating the achievement of these and all other SDGs (UN, 2021).

Many issues that are vital aspects of population ageing and the future of work are encompassed in the Madrid International Plan of Action on Ageing. Examples include but are not limited to work and an ageing labour force; eradication of poverty; income, social protection/social security and poverty prevention; health promotion and well-being throughout life; older persons and disability; and images of ageing (UN, 2002). Hence, following through on improvements in these fields will also prepare the region for ongoing and foreseeable demographic changes.
Along those lines, the four areas of action

[1] The Fourth Industrial Revolution is driven by many new technologies, including robotics, 3D-printing, artificial intelligence, machine learning, biotechnology, blockchain, mobile internet and the Internet of Things (AfDB, ADB, EBRD, IDB, 2018).

that are central to the declaration of the "UN Decade of Healthy Ageing" cover key aspects of population ageing, the future of work and social security, along with age-friendly environments, ageism, integrated care, and long-term care (WHO, 2020).

Finally, the Global Commission on the Future of Work proposes three pillars of increased investment – in people's capabilities, in institutions of work and in decent and sustainable work – with each pillar encompassing actionable measures (ILO, 2019e). Elements of the commission's report are reflected in the "ILO Centenary Declaration for the Future of Work", which represents a road map for a human-centred approach to the future of work, while taking into account profound global changes to the nature of work – changing demographics being one of them (ILO, 2019c).

In this paper, demographic and economic trends that are affecting the future labour force in Asia-Pacific countries are identified and presented in detail. While the focus is on the situation of present and future older persons, with health and well-being playing a crucial role, the size and relative share of the present and future working-age population plays a decisive role and receives attention. The paper brings together the latest statistical evidence and research from the region, as well as some good practices on how countries are addressing the challenges and opportunities of population ageing and labour markets.

The structure of the paper is as follows: the description of demographic trends in the region is followed by a description of the characteristics and trends in labour supply and demand, linking these trends to policy areas in the context of population ageing and work, such as social protection and continued education and training. The chapter on emerging trends and developments includes sections on the repercussions of the COVID-19 pandemic, the transition toward a green economy, the Fourth Industrial Revolution, and the impact of and responses to natural disasters. The paper concludes with recommendations on how to move forward toward more inclusive and sustainable labour markets that are prepared for further demographic, economic, technological and environmental changes.

The paper focuses on ESCAP members – with the exception of France, the Netherlands, the United Kingdom of Great Britain and Northern Ireland and the United States of America – and 9 associate members. Among these 58 countries, the majority are considered countries in special situations, which means that they are landlocked developing countries, least developed countries or small island developing States. Several qualify for two out of these three categories.[2]

The choice of statistics that are shown for individual countries and/or subregions partly depends on data availability. In some instances, the shown subregions are not identical to the subregions as defined by ESCAP but, for example, represent the country groupings as defined by ILO. Any statements about expected future demographic developments, like the share of the population 65+, are based on the medium variant of the latest population projections provided by the Population Division of UN DESA (UN DESA, 2019b).

[2] See: https://www.unescap.org/our-work/countries-special-situations

2. Demographic factors and the future of work

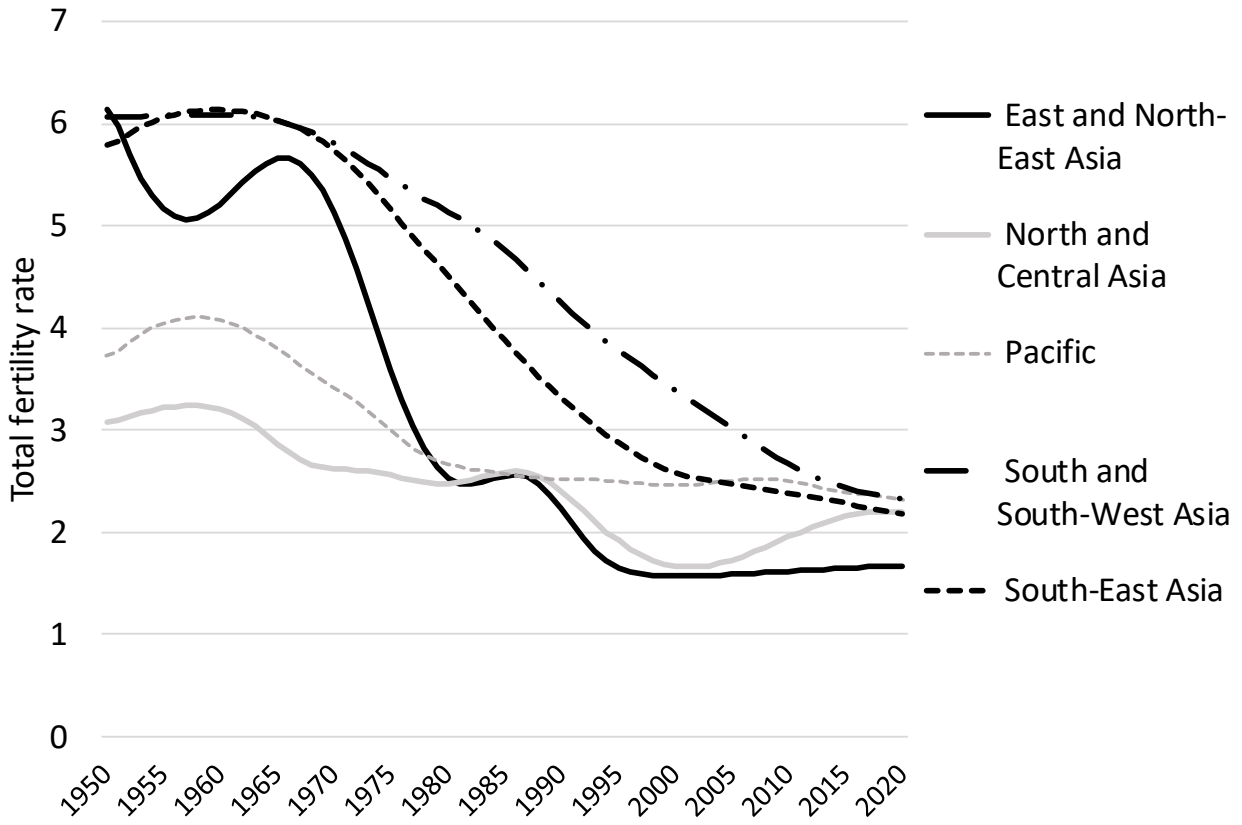
Population ageing and concomitant changes in the age structure of populations are no longer concerns restricted to high-income countries; they have been gaining importance for countries at various levels of development and in all regions of the world. The model of the demographic transition describes countries' transition from high to low levels of fertility and mortality, with reductions in mortality preceding reductions in fertility, and initial high levels of population growth. Persistent low fertility leads to the situation where the share of the working-age population starts to decrease while the share of the older population increases. The countries of the Asia-Pacific region are in different phases of population ageing, ranging from contexts with still rather low shares of the population 65+ (for instance, Afghanistan, Kiribati, Lao People's Democratic Republic and Pakistan) to contexts with extremely low fertility and high life expectancy (for instance, Australia, Japan, New Zealand and the Republic of Korea). Along with increases in the share of older persons comes a reduction in the number and share of the working-age population – triggering fears of shortages in labour supply.

Besides composition by sex and age, a characteristic that is of particular interest in the context of population ageing is individuals' human capital, in the following defined as educational attainment and health status. Looking at phenomena from a broader angle, the distribution between rural and urban areas, or subnational regions, as well as aspects like (income) inequality are also important dimensions of population compositions and have an effect on the opportunities and challenges of population ageing.

a. Fertility trends

The total fertility rate (TFR), a figure that measures the average number of children being born to women if the fertility rates observed in a specific period or year would last their entire reproductive life, has been declining in all Asia-Pacific subregions since 1950, although from different levels and at varying speed. The wide range between subregions in 1950, from 3.0 to 6.0 children, has by now reduced to 1.6 to 2.4 children per woman (figure 1). While it was still above 5.0 in East and North-East Asia, and hence among the highest in the region until around 1970, it dropped below 2.0 well before the turn of the century and has since been plateauing at around 1.6 children per woman. This fast reduction in fertility means that this region is now ageing particularly fast (figure 4). In the medium term, a permanent TFR of less than 2.1 –replacement level – means that a country's or subregion's population is going to shrink. unless in-migration makes up for the decline.

Figure 1: Total fertility rate, by Asia-Pacific subregion, 1950–2020

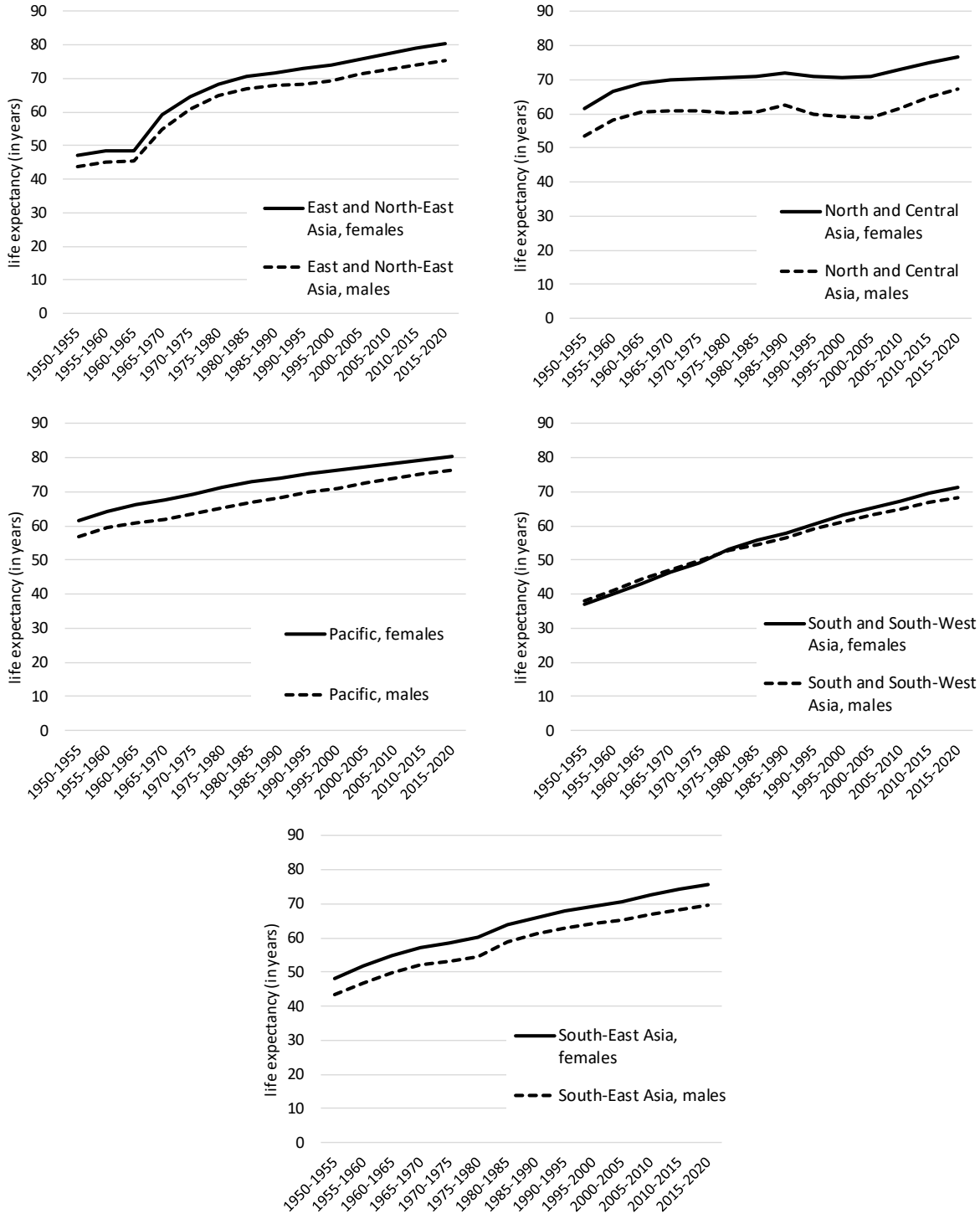


Source: UN DESA, 2019b.

b. Mortality trends

Mortality has decreased and life expectancy at birth has increased between 1950 and 2020 in every subregion. The relative increase was largest in South-East Asia, South and South-West Asia, and East and North-East Asia. The increase was particularly pronounced in South and South-West Asia, where life expectancy of women almost doubled within the last 70 years, from 37.0 to 71.2 years (figure 2). The trajectory of North and Central Asia is exceptional, insofar as there was no increase in life expectancy for several decades; only recently has life expectancy increased again. A more nuanced understanding of the underlying developments that led to these observed patterns at the aggregate level would require a closer look at the mortality developments in individual countries that make up each subregion.

Figure 2: Life expectancy at birth, by Asia-Pacific subregion, 1950/55–2015/20



Source: UN DESA, 2019b.

The difference between the number of births and deaths – called natural population growth – is positive in all of the five subregions (UN DESA, 2019b). Within the next two decades, it can be expected though that natural population growth will turn negative in East and North-East Asia. This is also the time period during which China, the second most populous country in this region, will start to experience more deaths than births. Once natural population growth turns negative, populations start to decline, unless migration counteracts this change.

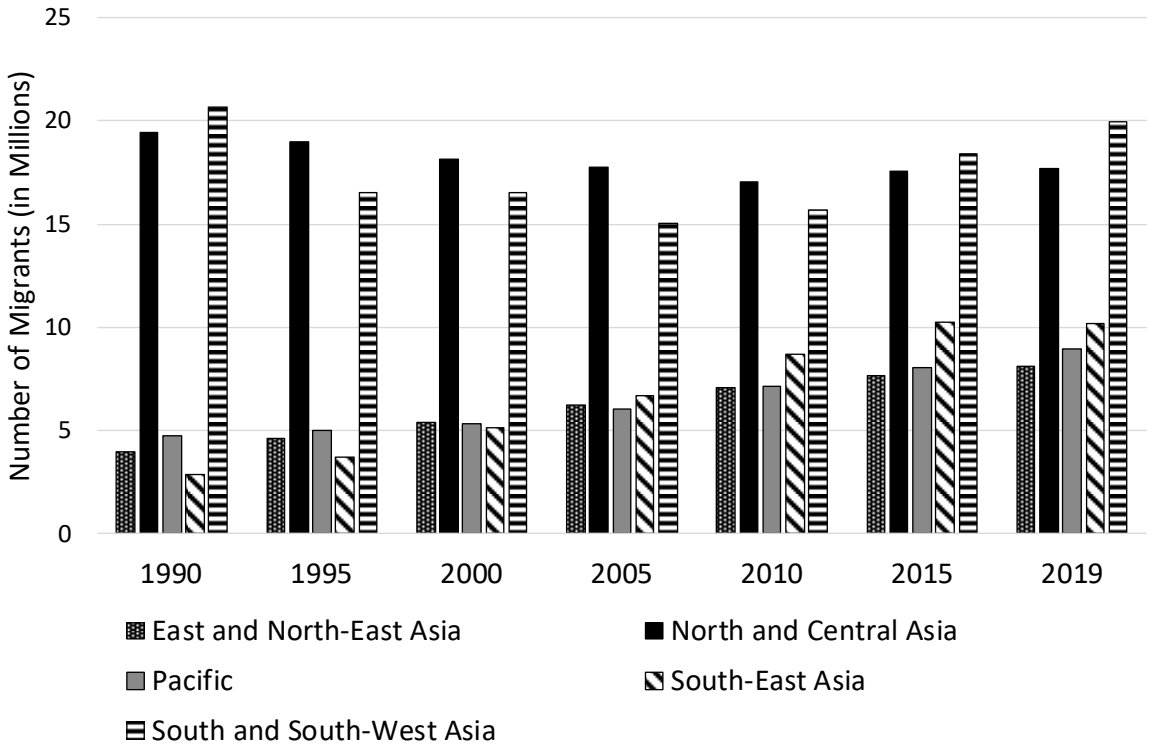
c. *Migration trends*

For most periods since 1950, net migration between each subregion and the rest of the world has been negative, meaning that more persons have left each region than migrated to it. The big exception is the Pacific subregion, that saw positive in-migration in all time periods, and North and Central Asia, that experienced positive net migration from around the year 2000 (UN DESA, 2019a).

What these regionally aggregated patterns are hiding are in part substantial migration movements between countries within each subregion. For example, the proportion of migrants who moved to countries in the same subregion in 2019 ranged from around a quarter of migrants from South and South-West Asian countries, to almost 56 per cent of migrants from the Pacific (ESCAP, 2020a). The number of international migrants in the region has increased from 51.7 million in 1990 to 64.9 million in 2019 (ESCAP, 2020a). A total of 70 per cent of these 64.9 million were intraregional migrants who moved between countries within the region. Looking at migrant stock in each subregion, it becomes apparent that, while the largest stock of international migrants was and still is located in North and Central Asia and South and South-West Asia, the numbers have been increasing noticeably in the three other subregions (figure 3).

Since digital transformation and automation directly influence the demand for workers with different skill levels, changes in these areas and the speed of these changes have an effect on migration opportunities and decisions. More and more countries in the region are facing a declining and ageing labour force, and migrants might increasingly be actively recruited. Additionally, another megatrend – climate change – has the potential to shape future migration in the medium term. Not surprisingly, the kind of climate-change related risks and their severity differ significantly between countries in the region (ABDI, OECD, ILO, 2021).

Figure 3: International migrant stock, by Asia-Pacific subregion, 1990–2019



Source: UN DESA, 2019a.

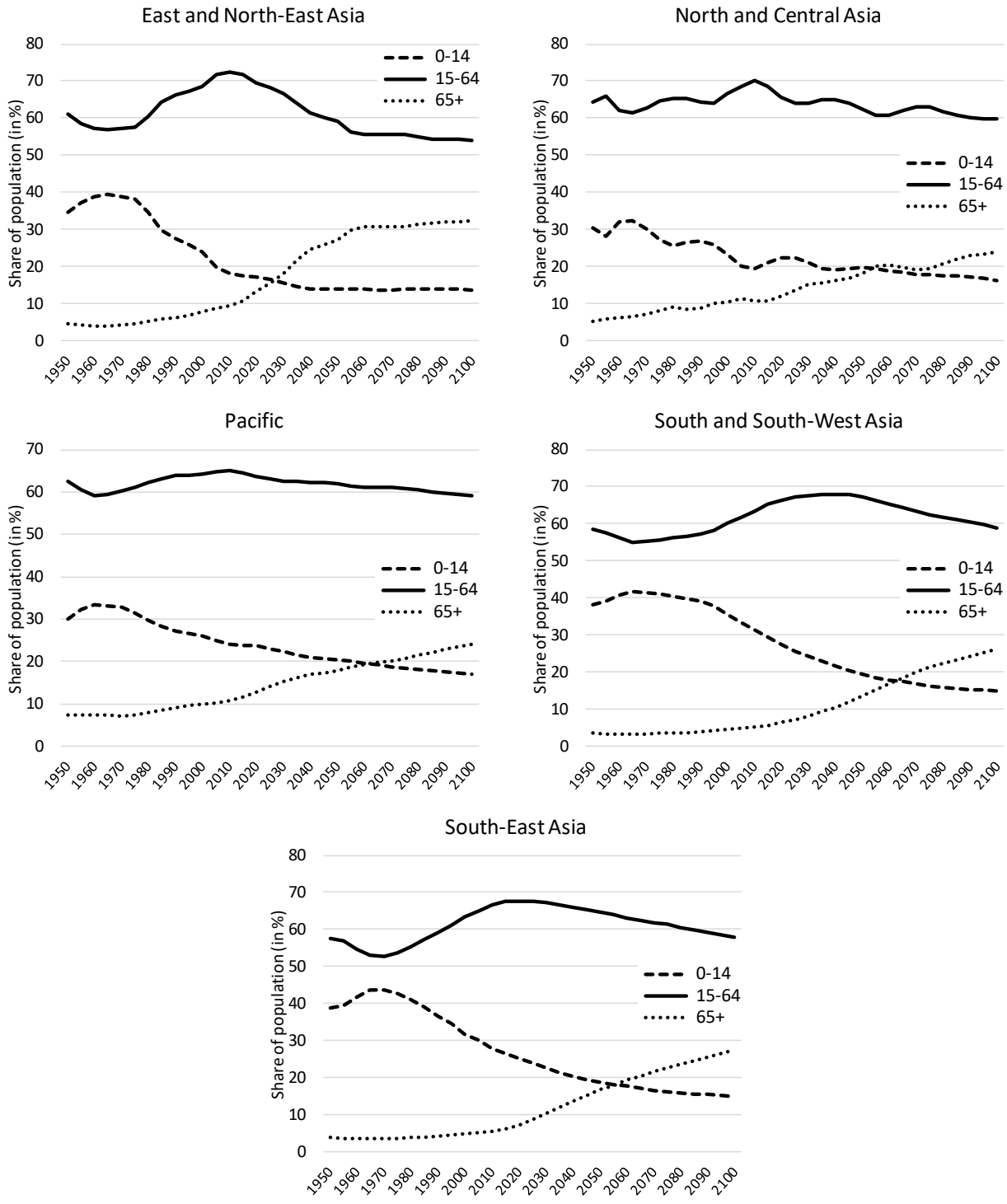
Although the focus of this paper is both on developments at the regional and country level, the latter is the level where social, economic and environmental policies that are shaping the lives of individuals are being set. This should not hide the fact that the demographic situation differs significantly at the subnational level, and internal migration can play an important role here. People move for different reasons: lack of access to education, searching for work, and avoiding climate change, environmental degradation or political conflict are some of the drivers of migration. Young adults often migrate for economic reasons, coupled with differences in labour supply and demand between urban and rural areas. As a result, the share of the working-age population is larger in urban than in rural areas in Asia and the Pacific (UNDP, 2016). These subnational differences have to be kept in mind when putting national policies that deal with changing labour demand and supply into action.

d. Changes in age structure

The described past and ongoing changes in fertility and life expectancy have direct effects on the age-composition of the population in Asia and the Pacific. The overall patterns and trends are similar across subregions, with differences in the timing of changes: while the share of the population 65+ already started to increase more than 50 years ago in East and North-East Asia, North and Central Asia, and the Pacific, it is a much more recent phenomenon in South and South-West Asia, and South-East Asia (figure 4). Still, the speed of population ageing is increasing, and the largest rise is yet to come in all regions, meaning that by 2060, about one in five persons will be aged 65+ in all subregions except in East and North-East Asia, where it will be almost one in three persons. This change in age-structure can also be seen in the changing shape of the population pyramids from 1980 to 2060 in figure 6. In 2020, Afghanistan, Lao People's Democratic Republic, Maldives, Pakistan, Tajikistan and Vanuatu were among the countries with the lowest share of the population 65+. The highest shares were found in Australia; China; Hong Kong, China; Japan; New Zealand; the Republic of Korea; and the Russian Federation. Country-specific statistics on the TFR and male and female life expectancy in 2015/2020, and the share of the population aged 15–64 and aged 65+ in 2020, 2040 and 2060 are compiled in table 4 in the appendix.

Besides the general shift towards an older age structure, this also means an increase in the number of older women. While men and women are exposed to similar risks and situations in old age, there are aspects that affect women to a larger extent and/or in more severe ways than men, and make them economically and socially more vulnerable. Often, these vulnerabilities in old age are the outcome of life-course disadvantages (Serrao, 2015).

Figure 4: Population shares of age-groups 0–14, 15–64 and 65+, by Asia-Pacific subregion, 1950–2100, percentage

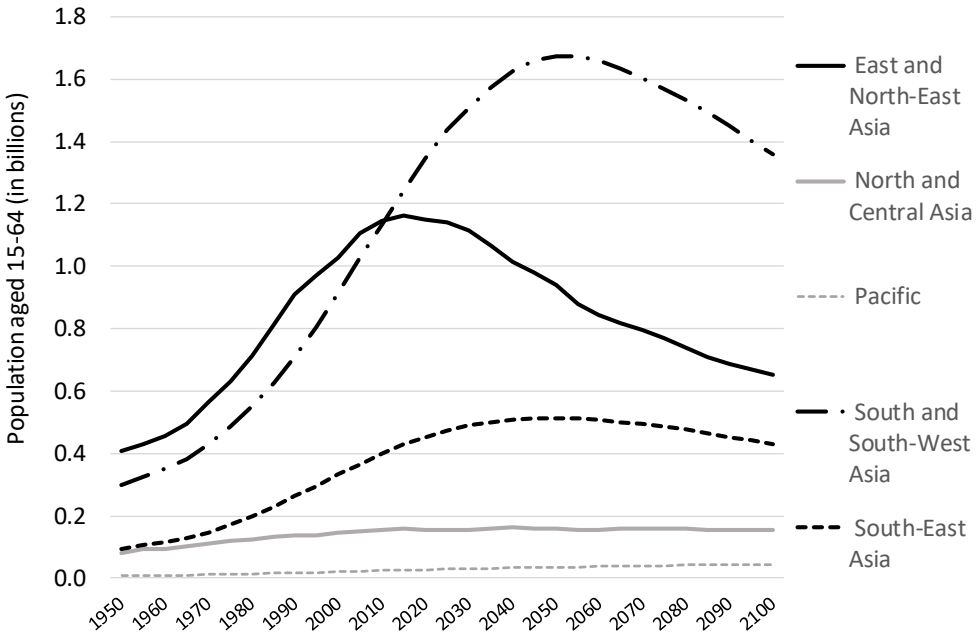


Source: UN DESA, 2019b.

Changes in fertility and, to a lesser extent, in mortality, also have a direct effect on the share of the working-age population. East and North-East Asia, North and Central Asia, the Pacific and South-East Asia already passed the maximum share of the working-age

population or are about to, whereas this will not happen for South and South-West Asia until around 2045. When it comes to the absolute number of persons of working age, only East and North-East Asia has already passed the peak (figure 5).

Figure 5: Absolute size of the population aged 15–64, by Asia-Pacific subregion, 1950 to 2100



Source: UN DESA 2019b.

Turning to the country-level, time-delayed developments for the peak in the share and the absolute number of the working-age population are also detected. In those instances where one or both events have not yet occurred, the point in time when this is projected to occur depends on the current age-structure and the interplay of future fertility and international migration. For example, in Australia, the absolute number of persons aged 15–64 is projected to continue to increase throughout this century. The peak in the share of the population 15–64, however, was reached already a decade ago and a continuous decline is projected. In Afghanistan, on the other hand, an increase in both indicators is projected well into the second half of this century. Only in a small number of countries in the Asia- region have both peaks already been attained: in Armenia; China; Georgia; Hong Kong, China; Japan; the Russian Federation; the Republic of Korea; Singapore; and, most recently, Thailand.

Before 2060, the absolute number of persons of working age and the share of the working-age population are projected to peak in an additional 21 and 18 countries, respectively (table 1). This again demonstrates the different stages of demographic change that countries are currently in: some are still facing a situation where more productive and decent employment opportunities are needed each year for a growing population of working age for several decades, others are already dealing with ongoing or soon expected declines in their potential labour forces.

Table 1: Period during which the share and the absolute number of persons of working age (15–64) peak. Asia-Pacific countries in order from earliest to latest peak year within each time period

Period	Peak in the share of population aged 15 to 64	Peak in the absolute number of the population aged 15 to 64
Until 2020	Japan Sri Lanka Australia New Zealand Russian Federation China Hong Kong, China Macao, China Georgia Kazakhstan Kyrgyzstan Mongolia Singapore Thailand Armenia Azerbaijan Iran (Islamic Republic of) Viet Nam Republic of Korea French Polynesia Guam Brunei Darussalam Malaysia Dem. People's Republic of Korea Maldives	Armenia China Georgia Japan Russian Federation Hong Kong, China Republic of Korea Singapore Thailand
From 2021 to 2060	Indonesia Turkey New Caledonia Myanmar Bangladesh India Uzbekistan Turkmenistan Bhutan Cambodia Lao People's Democratic Republic Nepal Philippines Micronesia (Fed. States of) Timor-Leste Afghanistan	Dem. People's Republic of Korea Maldives French Polynesia Sri Lanka Brunei Darussalam Viet Nam Azerbaijan Iran (Islamic Republic of) Turkey Bangladesh Bhutan Malaysia Nepal India Myanmar Guam Lao People's Democratic Republic Micronesia (Fed. States of) Cambodia Indonesia New Caledonia

From 2061 to 2100	Tonga Papua New Guinea Samoa Fiji Pakistan Vanuatu Kiribati Solomon Islands Tajikistan	Philippines Tonga New Zealand Fiji Uzbekistan Kazakhstan Turkmenistan Afghanistan Kyrgyzstan Mongolia Samoa Pakistan Timor-Leste
After 2100		Australia Macao, China Kiribati Papua New Guinea Solomon Islands Tajikistan Vanuatu

Source: UN DESA, 2019b, author's calculations.

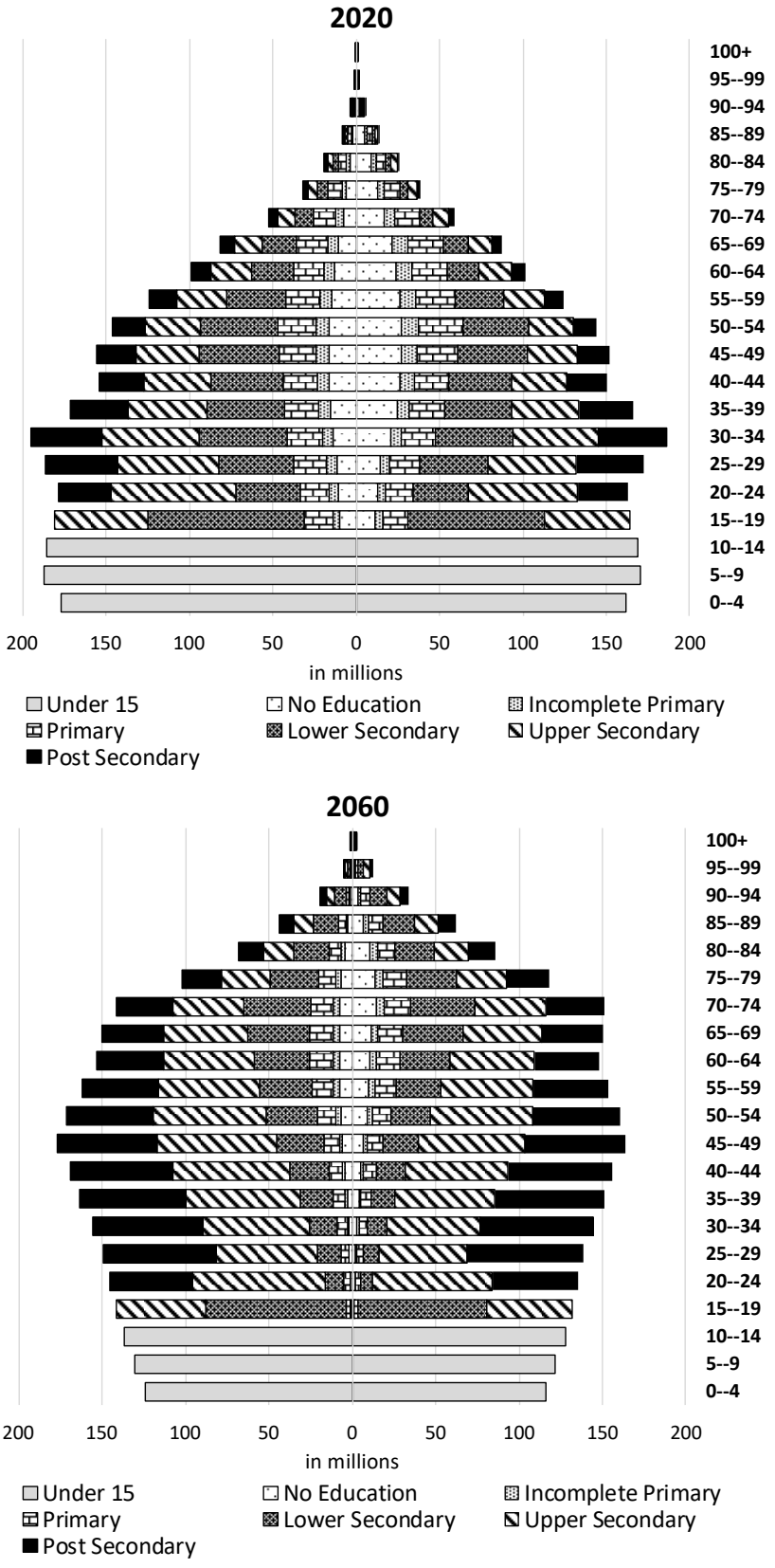
e. Changes in educational attainment

Next to age structure, educational attainment is a characteristic that has been shown to be highly relevant in the discussion about the opportunities and challenges of ageing populations (Cheng and Loichinger, 2017; Loichinger, 2015; Lutz et al., 2014). The main argument is that a smaller but more productive labour force could make up for some of the expected negative consequences of fewer persons of working age.

Education also plays an important role in considerations of health developments. Due to education expansion in every country in Asia and the Pacific, future older adults will increasingly be better educated than current ones. The positive association between education and health outcomes (section 2.f. Ageing and health) provides reason to expect that future older persons will be in better health than members of currently older cohorts (Loichinger and Pothisiri, 2018).

At present, in the Asia-Pacific region, three in ten persons aged 15 years or older have at most completed primary education. About 50 per cent possess lower or upper secondary education and 14 per cent have received post-secondary education. The education distribution varies significantly by age and gender though: the share with primary education or less is highest among older cohorts, and differences between men and women in educational attainment almost disappear for the youngest cohorts (figure 6, top panel). Making use of worldwide data on educational expansion and projecting future global and national educational attainment trends, it is possible to estimate the likely development of populations' education composition (Lutz et al., 2014). Based on this approach, the population in Asia and the Pacific will experience a significant shift in educational attainment between now and 2060 towards upper secondary and post-secondary education (figure 6, bottom panel).

Figure 6: Population by age, sex and education for the Asia-Pacific region, 2020 (top panel) and 2060 (bottom panel)

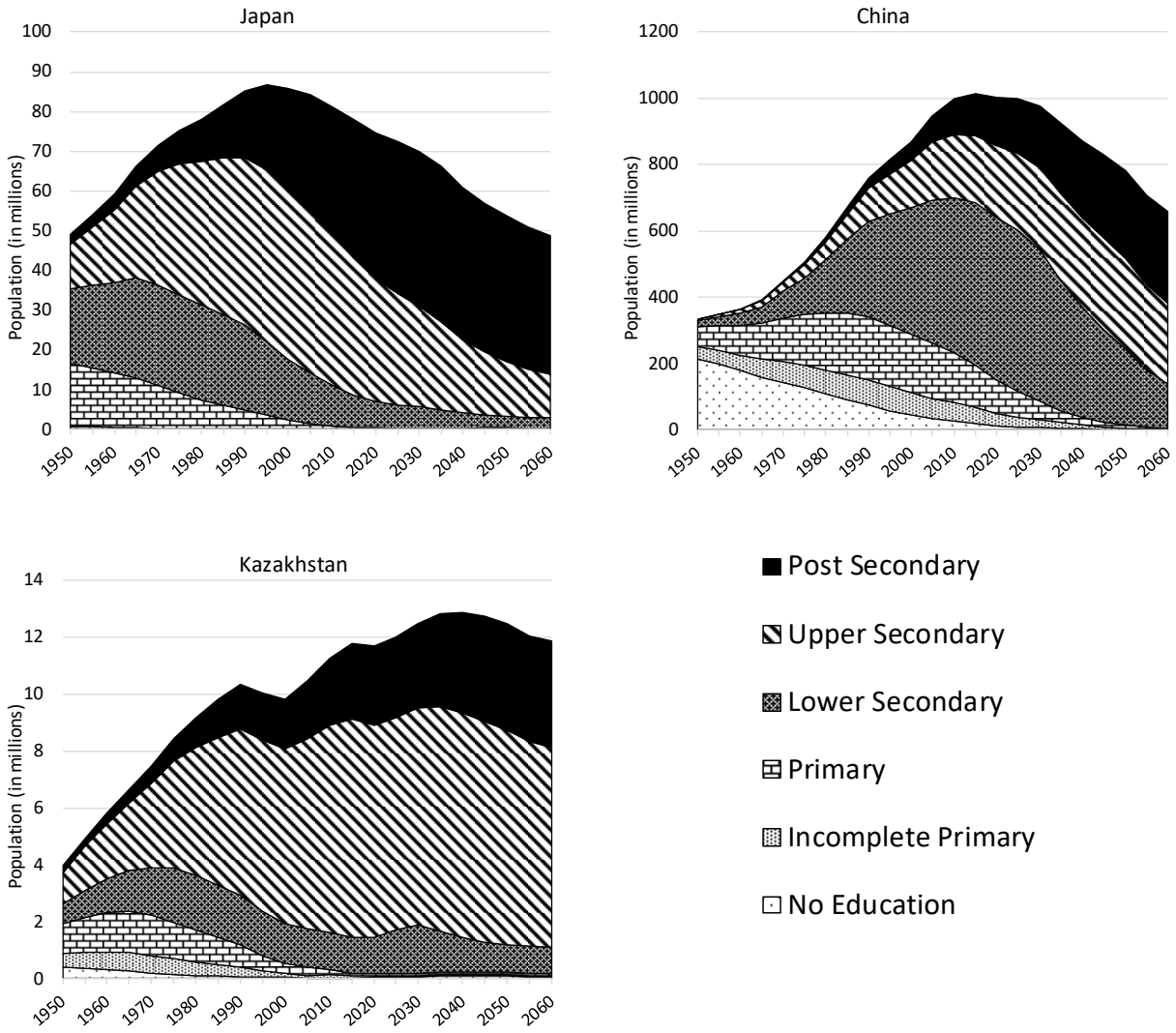


Source: Wittgenstein Centre for Demography and Global Human Capital, 2018, GET (Global education trend) education scenario. Asia-Pacific region countries, due to data availability without American Samoa, Cook Islands, Marshall Islands, Nauru, Niue, Northern Mariana Islands, Palau and Tuvalu; author's calculations.

The described shift for the region overall plays out differently in individual countries. This is illustrated by looking at Japan, a country considered hyper-aged, since the share of the population 65+ is over 20 per cent; China, considered a soon-aged country, since the share of the population 65+ is between 7 and 14 per cent; and Kazakhstan, where the population was until very recently considered as not yet aged, because the population share 65+ was below 7 per cent. In Japan, for example, the population aged 15 to 64 peaked before the year 2000 and has been declining ever since. Currently, there are about 74.6 million persons in this age-group and about half of them possess post-secondary education. Given the underlying assumptions of the projection, the working-age population will decline by more than 25 million until 2060 (figure 7). However, the share with post-secondary education will increase further: seven in ten working-age adults are expected to possess post-secondary education. The expected development for China goes in the same direction, with significant increases in the share of the working-age population with upper secondary and post-secondary education, while the number of persons aged between 15 and 64 are projected to decrease. The situation that presents itself in Kazakhstan is different: here, the working-age population will continue to increase over the next two decades and start to decrease around 2040. Again, the educational attainment situation will shift towards a higher share of persons with at least upper secondary education. The share with post-secondary education is projected to surpass 30 per cent around the year 2050.

Older adults that are nearing current retirement ages (defined here as the population aged 50 to 64) will, in an increasing number of countries in the region, represent a prominent share of the working-age population. Country-specific projected changes in education composition between 2020 and 2060 are compiled in figure 9 in the appendix. The pattern in 2020 reveals that the majority of the population aged 50 to 64 still has at most primary education in a significant number of countries. At the same time, in countries in East and North-East Asia and in North and Central Asia, everyone in this age group already possess at least secondary education. By 2060, the projected education structure in each country (with the exception of Afghanistan) will likely be such that the majority of older adults will have secondary, if not post-secondary, education. It is expected that these developments will be favourable for older workers' employability.

Figure 7: Working-age population (15–64) by educational attainment for Japan, China and Kazakhstan, 1950–2060



Source: Wittgenstein Centre for Demography and Global Human Capital, 2018; GET (global education trend) education scenario.

f. Ageing and health

Together with education, health is a vital factor of populations' human capital. Health status at older adult ages is not independent of the situation at younger ages – advantages as well as disadvantages accumulate across the life-course. This explains why having the whole life-course in mind is helpful to understand health outcomes later in life. Besides by gender, health status often varies significantly between persons with a difference in income, education or occupation. These socioeconomic differences are an important aspect of public health measures in any society and of populations at any stage of the demographic transition. Universal social health protection is of utmost importance for the well-being of children, persons of working age and older persons. Poor health due to inadequate health care entails costs to individuals, families and society overall.

The ways health systems are funded and organized varies widely in the region. Universal health coverage is far from being established everywhere yet, and health-care coverage varies often noticeably within countries between persons of different education, age or employment status. Out-of-pocket payments for health expenditures can

be detrimental for vulnerable and already disadvantaged individuals and households.

In ageing populations, the health status of older persons comes under scrutiny for several reasons. With shrinking populations of working age, calls for the extension of working lives in order to react to labour supply shortages and to take pressure off pension systems are common. A crucial question in that context is to what extent are people able to work longer. Given the aforementioned socioeconomic differences in health outcomes, the ability to work until higher ages is easier for some persons than others. These differences have to be considered when designing labour market, social and pension policies; otherwise, already marginalized groups could face additional hardship. Being a vital component for workers' health, the topic of occupational health is gaining more and more importance in ageing societies.

Looking beyond retirement ages, the fact that an increasing share of the population is living well into its 70s and beyond means that care needs increase as well. While the likelihood of individuals to require care increases with age, individual risk varies considerably, since the need to receive long-term care depends on many additional factors besides age. In general, the longer people can live independently and have good quality health and well-being, the lower the care demands. The WHO concept of healthy ageing includes a wide array of areas for action, for example age-friendly environments, equal access to services, adequate health and social services and life-long learning, to name just a few (WHO, 2020). A summary measure to compare the health status of the older population across countries is healthy life expectancy at age 60. The absolute number of years in good as well as the share of remaining life expectancy in good health at age 60 varies widely between men and women and across countries in Asia and the Pacific. Women have higher life expectancy compared to men, but they also tend to spend more years in poor health (Serrao, 2015; ESCAP, 2020b).

The demographic dividend describes a process where increases in the share of the population of working age offer potential for economic growth. This "window of opportunity" can be used if appropriate supportive policies in areas like education, health and the macro economy are in place (ESCAP, 2021c). A crucial aspect is whether the large share of the working-age population can be employed productively. Countries where this "window of opportunity" is currently open and in which the share in the working-age population has not yet peaked are all listed in table 1. The potential economic returns are largest in countries where fertility has declined relatively fast and the share of the working-age population is high.

Countries like China, the Republic of Korea, Singapore and Thailand have already experienced this phase and are now facing a decrease in the share of their working-age population. Japan went through this phase even earlier. For all of them, what has been labelled a "third demographic dividend" opens up new opportunities to counter the expected adverse effects of ageing on economic growth. The third demographic dividend represents "a newly defined demographic dividend generated through the use of the untapped work capacity of healthy older persons" (Ogawa et al., 2021, p. 59). It is estimated as the difference between the actual and potential labour force participation of the population aged 60 or over, taking into account various health-related aspects that might limit labour supply. Example calculations for Japan and Malaysia show significant untapped potential.

3. Characteristics and trends of labour supply and demand

While an analysis of the development of the number and share of persons of working age is useful to get a general idea of trends in labour supply (section 3.d. Changes in age structure), it can only be a starting point. In order to more solidly portray what the changes in age structure mean for labour supply, aspects like actual economic activity (labour force participation) and the quality of work (formal/informal employment) should also be considered.

When it comes to labour demand, several general trends have emerged across the region. For example, a growing gap between urban and rural areas in labour market outcomes occurred between 2011 and 2017 in countries in Asia and the Pacific (ILO, 2021c). Within urban centres, a polarization was noticeable; private sector employment, including for medium- and high-skilled jobs, increased at the same time that informal employment in service industries, characterized by low productivity, did. The latter was partly due to decreasing employment in the agricultural sector and the related shift from rural to urban employment.

The evolution of present and future labour supply and demand is shaped by major trends like the Fourth Industrial Revolution, where some jobs are being replaced by technology, while new jobs are being created. This happens along with endeavours to increase decent job opportunities in the green economy (ILO, 2019b).

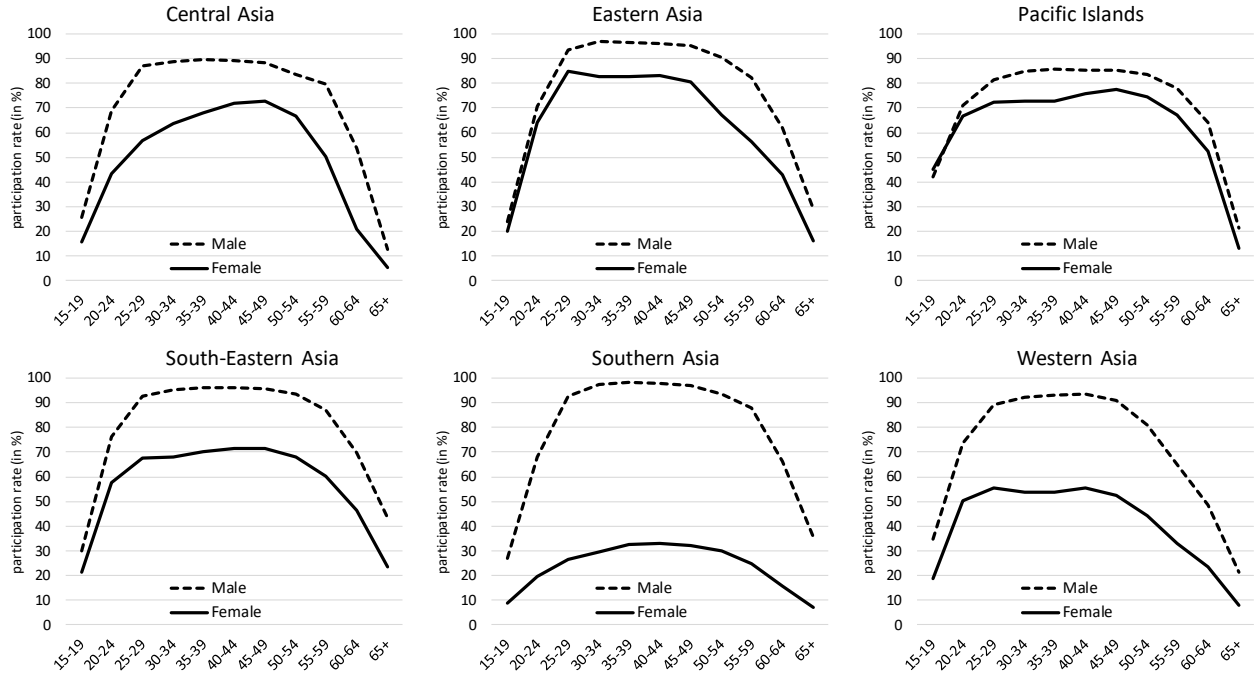
a. Labour force participation in Asia and the Pacific

The labour force comprises the economically active population, which means those employed – in paid employment or self-employed – and those unemployed. Patterns of labour force participation differ significantly between subregions in Asia and the Pacific, and more so between women than men. Participation rates for men of prime working age are close to 90 per cent or above in all ILO subregions, with the exception of the Pacific Islands, where they are slightly lower (figure 8). For women, participation rates range from just above 30 per cent for adult women in Southern Asia to more than 80 per cent in Eastern Asia. Disparities between men and women are lowest in Eastern Asia and the Pacific Islands and greatest in Southern Asia. It has to be kept in mind that due to differences between countries in the collection of data on their labour force, workers in the informal economy are not consistently included in these statistics.

What these numbers do not reflect is the large amount of unpaid work performed at any point in time; for example, own-use production of goods and own-use provision of services.[3] Unpaid care work (section 1.h. The care economy) is an important aspect here, not least because of persistent gender inequalities in the provision of unpaid care and consequences for participation in the paid labour market (ILO, 2018b). In Japan, for example, there is evidence of workers of prime working age leaving the labour market in order to take care of an elderly parent (ESCAP, 2017b).

[3] See, for instance: https://ilostat.ilo.org/resources/concepts-and-definitions/forms-of-work/

Figure 8: Labour force participation rate by age and sex for selected ILO subregions, 2019, percentage



Source: ILO, 2020b.[4]

Traditionally, labour force participation has been differentiated by age and sex. Depending on the country-context, differentiation by additional dimensions – for example between urban and rural areas, and by ethnicity or by marital status – can reveal important disparities. An additional dimension that for several reasons has been gaining increasing attention, particularly in the context of ageing populations, is education. For one, persons with different levels of education show different levels of participation due to factors related to labour supply and demand that are at play. An often-found pattern is that the higher the level of educational attainment, the more similar are age-patterns of participation rates between women and men (Loichinger, 2015). Another argument to include education in any analysis of countries' labour supply is because the education structure of populations differs between countries and is changing: in almost any setting, individuals of younger birth cohorts possess higher levels of educational attainment than those of older cohorts.

b. Changes in educational attainment

The combination of both differences in labour force participation between persons with varying educational attainment, and differences between countries in the education composition of their populations mean that education is an important determinant in any discussion about labour supply.

The role of female labour force participation in the context of population ageing and labour supply, emphasizing the aspect of educational attainment, has been demonstrated for selected Asian economies (Cheng and Loichinger, 2017; Loichinger and

[4] ILO country groupings: https://ilostat.ilo.org/resources/concepts-and-definitions/classification-country-groupings/ ILO detailed subregions are used here that cover 63 countries: 58 countries of the ESCAP region, plus Cyprus, Israel, Norfolk Island, Tokelau, and Wallis and Fortuna Islands.

Cheng, 2018). The argument is not only about increasing labour force participation of women in general in settings with significant gender differences in participation, but also about the importance of including information on education. Low female labour force participation can mean missing out on a large share of the qualified workforce. Some consequences of the expected decrease in the number of people of working age in more and more countries can likely be alleviated by having a more educated and consequently more productive labour force. This general argument also applies to Asia-Pacific countries with rapidly ageing populations and currently comparatively low levels of female labour force participation.

While education gradients in participation exist for men as well as for women, they are usually more pronounced for women. Data on 35–44 year-old women are provided in table 2 for selected countries in Asia and the Pacific. The data show the wide range of outcomes for different education levels that remain undetected if only the average across all education groups ("total" in table 2) is considered. With few exceptions, the education gradient is positive, meaning that higher levels of educational attainment are associated with higher labour force participation.

Table 2: Labour force participation rate of women aged 35–44, by level of education for selected Asia-Pacific countries, 2019/2020, percentage

Year	country	Less than basic education	Basic education	Intermediate education	Advanced education	Total
2020	Afghanistan	19.1	14.5	31.3	58.5	19.4
2019	Armenia	-	55.1	58.9	81.5	63.9
2019	Brunei Darussalam	42.0	61.2	75.1	79.1	72.5
2019	Cook Islands	-	58.5	87.5	92.6	79.9
2020	Cyprus	-	69.3	79.9	89.3	84.0
2020	Georgia	12.9	35.8	51.6	73.0	59.6
2020	Hong Kong, China	-	60.0	75.7	83.9	75.4
2019	India	36.5	29.1	27.0	37.9	32.8
2020	Indonesia	66.1	60.3	58.3	79.5	62.7
2019	Iran, Islamic Republic of	17.2	15.7	15.7	47.9	23.3
2019	Kiribati	-	24.1	44.4	87.9	42.7
2020	Korea, Republic of	34.9	51.6	59.2	63.7	62.2
2019	Maldives	52.0	41.9	58.7	90.3	51.8
2019	Marshall Islands	-	29.2	30.1	91.6	37.2
2020	Mongolia	59.3	76.2	68.4	75.2	72.5
2019	Myanmar	62.6	58.9	52.8	61.5	58.9
2020	Russian Federation	-	64.9	91.3	90.0	89.5
2020	Seychelles	-	-	83.8	88.9	87.5
2020	Thailand	70.2	80.3	81.4	88.9	82.5
2019	Vanuatu	24.0	59.8	80.4	93.3	61.1
2020	Viet Nam	74.5	87.1	87.4	97.6	86.9

Source: ILO, 2020b. Data shown for the latest year of availability.

c. *Employment in the informal and formal economy*

The great majority of workers, namely 68.2 per cent, in Asia and the Pacific are employed in the informal economy when the agricultural sector is included, 59.2 without it (ILO, 2018).[5] The figure is highest in Southern Asia and lowest in the Pacific Islands. When looking at the composition of informal employment by status in employment, it becomes clear that the largest employment share comprises own-account workers (45.5 per cent) and employees (34.4 per cent). Contributing family workers (17.8 per cent) and employers (2.3 per cent) comprise relatively smaller shares. In all subregions of Asia and the Pacific, as defined by ILO, informal employment as a share of total employment shows a clear relationship with education: while 90 per cent or more of those with no education are in informal employment, the share is below 45 per cent for those with tertiary education in all subregions. The exception is Southern Asia, where even in the group of tertiary educated, slightly more than 70 per cent, are in informal employment.

When looking at the distribution of informal employment by age in Asia and the Pacific, a U-shaped pattern becomes apparent: The highest share of informal employment in total employment can be found among those aged 15–24 and those aged 65 years or older (more than 85 per cent). For ages 25 to 64, the corresponding numbers are at around 70 per cent or less. Another crucial dimension is residence area: while informal employment represents 85 per cent of total employment in rural areas, less than half of total employment in urban areas is informal. At the country level, a clear negative association between level of economic development and the proportion of the informally employed exists (ILO, 2018).

For Asia and the Pacific overall, the chance of being in informal employment is higher for men (70.5 per cent) than for women (64.1 per cent). These aggregate figures hide different patterns at the subregional as well as the country level. Broadly speaking, the lower the level of GDP per capita, the higher the chance that a greater share of women than men are in informal employment. Another aspect in the gender dimension of informal employment is that the kind of informal jobs women perform are often more vulnerable than those performed by men.

Progress in the last two decades towards more decent employment opportunities and attainment of important aspects of SDG 8 in the region has been slow: this includes slow developments with regard to the protection of labour rights, employment opportunities for young persons and progress with safety at work (ESCAP, 2021b). Growth in decent jobs decreases vulnerabilities and inequalities in the labour market and is conducive to economic growth (ESCAP, 2018). Most countries in Asia and the Pacific, as defined by ILO, show large deficits when it comes to the targets set for decent work in the ILO Decent Work Agenda and in the Agenda 2030. A closer look reveals, though, that outcomes differ significantly by country income level and point towards the role of labour market governance and policies on labour market structures (ILO, 2018a).

Globally, increasing educational attainment levels are associated with decreasing shares of informal employment (ILO, 2018c). Given likely increases in education levels in every country, one could expect that informal employment in Asia-Pacific countries will decrease in the future.

d. *Social protection and the future of work*

Social protection, or social security, is a fundamental aspect of decent work. It "...is a human right and is defined as the set of policies and programmes designed to reduce and prevent poverty, vulnerability and social exclusion throughout the life cycle." (ILO, 2021d, p. 226). It covers nine main areas: benefits for families and children; maternity protection; support in case of unemployment; employment injury benefits; benefits in case of sickness; health protection; old-age benefits; invalidity/disability benefits; and

[5] For the ILO definition of the informal sector and informal employment, see: https://www.ilo.org/ilostat-files/Documents/description_IFL_EN.pdf

benefits for survivors. This shows that social protection provides support during specific life phases or in case of certain life events. Also, it protects against crises following external shocks like natural disasters, economic crises or, lately, the COVID-19 pandemic (ESCAP and ILO, 2021).

Social protection is organized by a wide range of systems. Their benefits have in common that they are organized in the form of contributory or non-contributory schemes, the latter mostly tax-financed, or a mix of both. The wide differences in the existence and comprehensiveness of social protection schemes in Asia and the Pacific are linked to the varying levels of economic development found in the region.

Social protection is crucial for the well-being of persons of any age, in countries of any level of development. When talking about the future of work, it would be narrow-sighted to focus only on the situation of the working-age population and those of retirement age. Children grow up to be future workers and their social protection should receive just as much consideration as that of any other member of society. This points to the need for a life course approach and active intergenerational solidarity. Strengthening social protection can lead to overall social, economic and environmental progress: prevention of poverty and improvement in human well-being; enablement of inclusive economic growth through investments in children's education and higher productivity; adaptation to more environmentally sustainable economic activity and resilience against environmental risks (ESCAP and ILO, 2021).

Despite improvements, social protection coverage gaps in Asia and the Pacific exist. A continuing issue is that contributory schemes cover predominantly formal workers; non-contributory schemes extend coverage to informal workers, but the level of support is often low. Given that about 70 per cent of workers in the region are informal workers, this has consequences for an enormous number of individuals and households. Several emergency support schemes that previously did not exist were set up in the face of the pandemic. Still, income disparity, poverty and inequality of opportunity have been aggravated in the region due to COVID-19, in many instances reversing progress made in the past few years. It remains to be seen to what extent quickly introduced emergency support schemes will be transformed into more permanent schemes.

The following insights on the situation of social protection of persons at different stages in their life course in Asia and the Pacific is compiled based on work by ESCAP (2020).

Children

Poverty and deprivation in childhood can have negative consequences for educational outcomes, cognitive development and employment throughout the whole life course. Missed opportunities for investments in children are hence detrimental to individuals and society overall. Social support schemes concerning children cover cash benefits to families and children, in-kind benefits, tax relief and parental leave benefits. If designed gender responsively, parental leave benefits and childcare service options can relieve women of unpaid care obligations, facilitating their participation in the paid labour market.

Currently, the great majority of children or households with children are not receiving any child or family benefits. Japan and Kazakhstan are among the handful of countries where more than one in two children or households with children are benefitting from them.

Persons of working age

Persons of working age can be exposed to a range of situations that have the potential to severely disrupt their and their families' income and livelihood.

Insufficient social protection around childbirth and during parenthood can increase the vulnerability of women. Well-designed maternity, paternity and parental leave policies can increase gender equality: parents can share childcare responsibilities and women have fewer barriers to participate in

the labour force. Unemployment benefits are mostly tied to previous contributions, meaning that large shares of the labour force in Asia and the Pacific are excluded. Existing non-contributory schemes usually provide very low benefits. The pandemic has demonstrated once again the importance of being able to react quickly to a surge in unemployed persons. China is among the countries that has expanded the eligibility for unemployment benefits to persons that were not covered before the pandemic. Sickness benefits are another example of benefits whose importance has been demonstrated vividly during the pandemic. Employment benefits in case of injury are often inadequate in coverage, not least because they are strongly linked to formal employment. When it comes to disability benefits, it is noticeable that in North and Central Asia greater coverage is provided than in any other subregion. A general problem, though, is that even when benefits exist, their level is usually insufficient, and applying for them is complex.

A basic challenge with all of the aforementioned social protection schemes for persons of working age is that migrant workers are in many instances not included; this can cause severe hardship and vulnerability.

Older persons

Older persons need income security in order to live independent lives. The widespread situation where support for older family members is provided within families is becoming less and less sustainable. Demographic change is leading to smaller families, with fewer young family members relative to older ones.

In most countries, a mix of contributory and non-contributory schemes exist; in some instances, they are alternatives, in others they complement each other, such as in situations where benefits from contributory systems are too low. Compared to other areas of social protection, the coverage of some form of old-age pension is high, but in many instances not adequate. Similar to social protection schemes in other areas, the design of non-contributory schemes has a strong effect on whether the intended target group is covered.

In the face of population ageing, contributory schemes are being reformed in many countries. Increases in retirement ages, higher contributions or cuts in benefits are possible measures. Also, individual accounts where benefits depend on the performance of stock markets have been introduced in some countries. This shifts the risk of future pension benefits from the State to the individual. Any reform should consider its consequences on subgroups of the population before being implemented, in order to prevent unintended effects.
There is also a gender dimension deserving attention: women often face more vulnerability in old age than men, thus old-age protection systems can provide vital support for them.

e. Older person labour force participation

At the global level, insufficient social protection of older persons often means that they are working beyond what is considered normal retirement ages. Without an official pension scheme or other social protection schemes in place, or with inadequate benefits of existing schemes and in the absence of other income sources, leaving the labour force at a specific age is not an option for everyone. Depending on the country context, existing pension schemes cover only parts of the population (for example, those with formal employment or public servants) or do not provide sufficient benefits for someone leaving the labour force in spite of receiving a pension. At the same time, low unemployment of older persons can hide labour underutilization and be the result of the discouraged worker effect rather than actually represent labour supply and labour demand (Gammarano, 2018).

When it comes to labour force participation of older adults in Asia and the Pacific, the picture is highly diverse. This does not come as a surprise, given the different levels of economic development and the associated differences in the existence and comprehensiveness of old-age social protection schemes. Tables 5 and 6 in the

appendix illustrate the development of labour force participation of men and women aged 60 to 64, and 65+ over time for those countries in Asia and the Pacific with available estimates by the ILO. Comparing participation rates of those aged 60 to 64 reveals that, while participation has increased in the majority of countries for women, the opposite is true for men. This has to be evaluated against a background in which female participation in 1990 started from a much lower level than male participation. The shown aggregate values for Asia and the Pacific by income level provide some insight into an underlying development: significant increases for both men and women are observed in high income countries. The results are much more mixed for other income groups. The pattern is albeit at a lower level of participation; this is similar to the situation concerning the age-group 65+.

Many studies that analyse both labour force participation of older adults and the decision to leave the labour force focus on high-income countries where the share of the population aged 65+ is already relatively high. There, working beyond normal retirement ages often goes along with a reduction in working hours or a change in jobs. Besides financial considerations, health status is an important predictor of retirement. The presence of grandchildren and the desire or need to provide care for them can lead to a reduction of participation in the labour force of grandparents, usually grandmothers. Evidence for the latter has been found for several European countries (Backhaus and Barslund, 2021). In the future, labour supply decisions could be increasingly affected by the rising numbers of older persons that do not have children or that have neither a partner nor children. Depending on the policy context of a country, being single and/or not having children that might provide intergenerational financial support could mean longer working lives in cases where there are no social security provisions in place (yet) to (adequately) make up for this. An effect in the same direction could also increase labour force participation of older persons due to other reasons than financial considerations, for example, remaining in the work environment for continued activity and socializing.

A recent detailed analysis of labour supply of older workers in Thailand illustrates the role of health status and pensions (Paweenawat and Liao, 2021). Thailand is among the countries that are experiencing rapid population ageing, due to past fast reductions in fertility to now below replacement level. In the Thai context, despite several benefit schemes for older persons, many older Thais have to continue to work. The study finds that being in poor health decreases labour force participation across the board, while the effect of receiving pension benefits differs between workers with lower and higher work status. This likely reflects the difference in the amount of benefits that formal and informal workers receive. When benefits and other means of financial support are insufficient, older Thais likely cannot afford to retire.

Detailed analyses of the ASEAN+6 countries reveals that those countries which are already facing decreasing labour forces or are soon expecting this – namely Australia, China, Japan, New Zealand, Malaysia, the Republic of Korea, Singapore and Thailand – are the ones that have introduced labour market policies to react to this development (ILO, 2019d). While all countries in the study have passed plans and/or policies that address population ageing and the situation of older persons, the listed countries are the ones that have introduced policies to prolong working lives. This has two effects. Firstly, later retirement increases labour supply and usually means that pension benefits start to be paid at a later date. Secondly, it has positive effects on the sustainability of pension systems.

Examples of the policies that have been introduced with the aim at prolonging working lives are (ILO, 2019d, p. 52):

- Extending legal retirement ages (as in Japan, Singapore and Thailand) or abolishing legal mandatory retirement ages (as in Australia and New Zealand)
- Preventing age discrimination
- Promoting age-friendly work environments, such as by allowing flexible working time

- Targeting of loans to help older persons to start businesses
- Supporting older workers that are unemployed through job placement
- Encouraging voluntary activities
- Promoting skills training and lifelong learning

Governments, employers, unions and civil society are vital actors in the endeavour to improve work choices, promote employment at older age and extend working lives. To achieve this, OECD (2019) has drawn up Council Recommendations on Ageing and Employment that address issues in three broad areas: 1) measures that reward work and delay retirement, such as redesigning pension systems to encourage and reward later retirement, and restricting the use of early retirement schemes for those who are still able to work, 2) measures that encourage employers to retain and hire older workers, such as introducing legislation that addresses age discrimination and reforming seniority-based pay schemes, and 3) measures that promote employability of workers of any kind throughout the life course, such as strengthening access to life-long learning opportunities and improving working conditions at all ages. Japan and the Republic of Korea are among the countries that have started to reform wage-setting practices. However, such practices are still common and mean that older workers in these two countries often have to change jobs and accept reduced earnings in order to remain employed. This shows the possible persistence of long-standing practices, even in the face of official policy change.

f. Continuing education and training

With the prospect of extending working lives in order to react to continuous increases in life expectancy, life-long learning will gain ever more importance. Currently, the education received in childhood and during young adulthood is in many settings no longer sufficient for the entire working life. Furthermore, providing education and training to persons of any age, and in particular older persons, is pertinent in the context of the Fourth Industrial Revolution, especially given changing skill demands (section 4.c. Fourth Industrial Revolution).

Continuing education and training can be of a formal or informal nature. Countries including Japan, Malaysia, the Philippines, the Republic of Korea, Singapore, Thailand and Viet Nam have introduced e-learning platforms that allow workers to participate in various learning settings (ILO, 2019d). Continuing education and training increases worker employability and can provide vital skills for labour markets where workers need to adapt to continuous changes in technology (ILO, 2004). For an increasing number of tasks and in ever more sectors, it will be necessary to reskill and upskill during one's working life.

Issues to be resolved in different institutional settings relate to where the responsibilities lie when it comes to the provision and financing of opportunities for continuing education and training. While employers have an interest in keeping their employees' skills up to date to increase their productivity, investments in the human capital of their staff likely increases the market value of workers and opens up other work opportunities for them. Yet, in situations with labour shortages in specific sectors, investing in the existing staff will become more attractive. In general, access to formal and informal options of continued education and training differs between urban and rural settings, as does the composition of private and public providers of adult education and training. Also, it is easier for larger companies than for small enterprises to upgrade the skills of their workforce (ILO, 2004). What kind of continuing education and training is deemed important and offered does not least depend on the level of educational attainment of the working-age population: in settings where large shares of the population possess post-secondary education, the demand for life-long learning will look different compared to settings with lower levels of education.

Access to adult education and training for all members of society who would like to participate is key: while the "digital divide" hinders access to certain groups (for example, those in rural areas and low-income

households), advances in information and communications technology (ICT) mean that groups that previously were excluded can potentially gained access to quality adult education services (Manzoor, 2009).

g. Trends in labour demand by skill level

Ongoing technological changes in the workplace in the context of the Fourth Industrial Revolution lead to both changes in the skill demands of existing jobs and the creation of new jobs with new skill demands altogether. Skill demands tend to change faster now than in the past, which means that many jobs will require upskilling and reskilling in the course of an individual's working life. Current trends include an increasing demand for:

- Higher-level skills and education
- Workers who can use technologies
- Formal skills rather than informal learning on the job
- Workers with skills in science, technology, engineering and mathematics
- Workers with skills that are important to transform countries into green economies
- Soft and non-cognitive skills, for example the ability to adapt to changes at the workplace and in the job market (Sakamoto and Sung, 2018)

Along with these shifts in skill demands goes a shift in tasks: in developing Asia and selected Asian economies, the share of jobs intensive in non-routine tasks grew between 2005 and 2015 at the expense of jobs in routine tasks (AfDB, ADB, EBRD, IDB, 2018, p. 55).

Taking a closer look, it becomes apparent that there are differences between countries with levels of economic development, different sectoral composition of the economy and different demographic realities when it comes to the effect of technological change on skill demand. In emerging Europe (which includes Armenia, Azerbaijan and Georgia), for example, a polarization of skill demand took place between 2006 and 2016: the share of employment in medium-skilled jobs declined and that in low- and high-skilled jobs increased (AfDB, ADB, EBRD, IDB, 2018). The reason behind this is that less-skilled jobs like construction and cleaning are harder to automate, as are high-skilled jobs. Additionally, an increase in highly-paid skilled jobs increases the demand for services that are low paid.

The survey of the World Economic Forum that asks about the jobs and skills business leaders worldwide expect to be important during the next five years, providing insights into the short-term development of skill demands. Even in light of the pandemic, the number of jobs discontinued and workers made redundant because of technological changes is expected to be lower than the number of new jobs that are being created in emerging professions. Skills that are being named as gaining importance are critical thinking and analysis skills, problem-solving, self-management skills and the ability to actively learn, and resilience and flexibility (World Economic Forum, 2020). The report contains country profiles for a range of countries in the Asia-Pacific region – namely Australia, China, India, Indonesia, Japan, Malaysia, Pakistan, the Russian Federation, Singapore and Thailand – with detailed information on emerging and redundant job roles and skills that are in high demand. With the exception of Pakistan, of the emerging jobs in high demand repeatedly mentioned in these countries, among the top three are data analysts and scientists, artificial intelligence and machine learning specialists, information security analysts and big data specialists.

Comparing the education level and the occupational group of employment of the young population (aged 15 to 24) allows an assessment of their qualification mismatch. While this approach has its shortcomings, it provides insights into the question whether the qualification level of labour market entrants matches the needs of employers. An analysis of Cambodia, Fiji, India, Indonesia, Pakistan, the Philippines and Samoa revealed that in every country, between 40 per cent and

almost 70 per cent of the employed youth experienced a qualification mismatch (ILO, 2015). In six out of the seven countries, this was predominantly due to underqualification. Only in the Philippines was the share of overqualified young persons larger than the share of those that were underqualified. Splitting the groups by gender revealed differences between young men and women, though no clear pattern emerged. Expanding quality educational attainment seems to be indispensable, given the ongoing and expected changes in qualification and skill demand. This does not mean that the goal should be for all to attain tertiary education: effective vocational training equips adolescents with the practical skills that many businesses in the region are looking for and reduces qualification mismatches (UNDP, 2016).

h. The care economy

Worldwide, the majority of care work – paid and unpaid, for children as well as for adults and older persons in need of care – is provided by women. This means that women predominantly bear the consequences of unpaid care provision – like negative effects on earning, working careers or pension and other social benefits that are linked to paid labour income. From a macroeconomic point of view, unpaid care work has effects on economic growth; women who provide unpaid care work are not or only to a limited degree (fewer hours) participating in the paid labour market (ESCAP, 2020c). This contributes to the gender inequality in the labour market (section 1.a. Labour force participation in Asia and the Pacific). Also, women with care responsibilities are more likely to be working in the informal economy compared to women who do not provide unpaid care (ILO, 2018b). At the same time, if the unpaid care that is currently provided by women would need to be provided for in the paid labour market, it is far from clear how this would be financed (ILO, 2017). Policies that address gender inequality and other deficits related to unpaid care work concern services for childcare and elderly care, social protection transfers and benefits, care-relevant infrastructure and leave policies to balance paid employment and unpaid care work (ILO, 2018b).

Demographic change, changes in household structures, changes in female labour force participation and related changing care needs have led to an increase in paid care work, with further increases being likely (ILO, 2018b). Globally, most care workers are employed in the education, health and social sector, followed by domestic workers. Care workers are often migrants and part of the informal economy, meaning they generally experience poor work conditions and receive low pay. Domestic workers are particularly vulnerable and in danger of exploitation. Migrant workers that work in the care economy often face various forms of discrimination and a lack of regulatory measures (Fiedler, 2020). The 5R framework for decent care work addresses many current issues with paid and unpaid care work (ILO, 2018b).

Existing care services in Asia and the Pacific are predominantly addressing needs for childcare. The family is the main care provider of care for older persons in any country; often, older persons care for other older persons. Population ageing increases the demand for care related services of older persons and will likely mean a shift of care provision from families to the State and private market (for example, institutional caring arrangements and paid carers) (ESCAP, 2021a). The care economy is one sector that will play a crucial role in the future of work in Asia and the Pacific. The degree to which other providers like the government, the private sector, non-governmental organizations and local communities complement this care varies (DOP Thailand and CPS, 2018). In several countries, the provision of care for older parents is explicitly formulated as a legal responsibility. In Japan, Singapore and Thailand, foreign domestic workers are increasingly making up for shortages in local paid care workers. As a general observation, care needs and care provision varies between rural and urban areas, creating differing challenges. Among the ASEAN+3 countries, Japan and the Republic of Korea are the only countries that have a long-term care insurance system.

ICTs are increasingly being integrated in the provision of health services. They have the

potential to increase the efficiency, accessibility and cost-effectiveness of health services and to provide them in higher quality. One area where ICTs have been found to be a powerful tool in Asia and the Pacific is in addressing chronic health care demands of older persons (ESCAP, 2021f). Even before the COVID-19 pandemic, they appeared as a novel way to cater towards this group's health-care needs; the pandemic has sped up the implementation of such services. As with many new developments that require access to technology and digital infrastructure, they can reduce but also exacerbate existing inequalities between subgroups of populations.

ICTs can be categorized by their function and use as management systems, communication systems, decision support systems and information systems. In reality, when they are used in the health sector, it is often a combination of several of these aspects. Good practice examples of projects where ICT has been introduced in Asia and the Pacific to address challenges related to the management of chronic diseases of older persons cover Afghanistan, Australia, Cambodia, China, Fiji, India, Japan, Kyrgyzstan, Malaysia, Pakistan, the Republic of Korea, Singapore, Tajikistan, Thailand and Viet Nam (ESCAP, 2021f).

i. Labour migration in the context of population ageing

The diverse demographic situations in countries in Asia and the Pacific mean that, while some countries with ageing populations are already facing labour shortages for certain skills and in specific sectors, others with still relatively young populations are facing an excess of labour supply over labour demand (ESCAP, 2020a). One sector with clear demand for labour migrants in ageing societies is usually the care economy (ILO, 2019a). Countries that rely heavily on foreign domestic care workers are Malaysia, Singapore and Thailand. While the family is the main care provider in every society, domestic care workers are playing a more and more important role as institutionalized care markets mature. Thus, the care economy and labour migration in the context of population ageing are strongly linked (section 1.h. The care economy).

In countries with large young populations like Indonesia, Myanmar and the Philippines, on the other hand, migrating to countries with labour demand is an often-sought resort. In principal, this applies to workers of any skill level. For example, in contexts where the supply of skilled workers (still) exceeds the demand for them, they might move to other countries that pay higher remuneration for skilled work. More often than not, the destination countries are countries where population ageing is already more advanced. The foreseeable ageing of populations in currently still youthful countries of origin will likely have effects on future migration flows in the region.

The latest Asia-Pacific Migration Report (ESCAP, 2020a) provides a comprehensive overview of key features and developments on migration. Focusing on labour migration in the context of population ageing that is taking place within and between the subregions of Asia and the Pacific (and not between the rest of the world), there are a few noticeable trends. Within South-East Asia, Malaysia, Singapore and Thailand – countries with low fertility and ageing populations – are major destination countries of labour migrants. Often, migration is higher among neighbouring countries than across larger geographical distances. In East and North-East Asia, the fastest ageing subregion, countries like Japan and the Republic of Korea – until recently very restrictive towards immigration – are revising their immigration policies to react to shortages in labour supply. Labour migrants to the Republic of Korea are predominately from Cambodia, Myanmar, Uzbekistan and Viet Nam.

What is interesting in this context and also potentially relevant for local labour markets is student mobility within subregions but also between Asia-Pacific subregions. China, for example, is by now attracting significant numbers of students from India, Pakistan, the

Republic of Korea and Thailand. Within the Pacific subregion, migrants from the Pacific island countries to Australia and New Zealand make up for worker shortages in certain sectors.

The decision to migrate is complex and many factors are prevalent. Migration policies in sending and receiving countries are one of them and playing an increasingly important role in the region. On the one hand, policy shifts in countries of origin can affect migration flows to destination countries. An example is a recent policy of the Philippines that limits the out-migration of health-care workers to other countries. On the other hand, migration policies in countries of destination influence who and how many can potentially migrate and for how long. An example is Japan's Specified Skilled Worker programme that could lead to a noticeable increase in the number of labour migrants from the region that stay in Japan for extended periods of time compared to what was possible previously (ABDI, OECD, ILO, 2021).

4. Emerging trends and developments and their impacts on the future of work

The nature of jobs is changing: structural transformations, one of them being unprecedented technological progress, are affecting the world of work and the demand for labour. This was already the case before the COVID-19 pandemic. Workers with different characteristics – be them gender, age, education and skill level, rural or urban area of living, or employment in the formal or informal economy – are differently affected and have varying options when it comes to dealing with and reacting to the consequences of technological and structural changes. Similarly, the consequences of COVID-19 on national economies and countries' populations has not been uniform. The pandemic has in some ways sped up ongoing changes, but the effects vary greatly between sectors and employment settings. Ongoing and emerging trends like the Fourth Industrial Revolution, the transitions to green economies and adaptation to and mitigation of climate change are not happening independently. On the contrary, they are interdependent in many ways.

a. *The repercussions of COVID-19*

There is ample of evidence from previous economic crises concerning impacts on the world of work and the situation of workers. COVID-19 is different since, as a pandemic, it affects economies on a truly global scale. The impact on human and physical capital can be compared to that of wars and natural disasters (World Bank, 2020). The immediate global economic impact varied across sectors. The demand for services that could be performed remotely, were not affected by contact restrictions and/or were possibly even in higher demand due to the circumstances of COVID-19 increased. This meant an increase in the demand for ICT services and deliveries. At the same time, demand decreased for services in the accommodation sector, for restaurants and for retail trade (Abay et al., 2020).

Initial responses concerned mostly measures of (public) health, but economic and social measures followed swiftly. While the pandemic is still ongoing at the time of writing this paper and the world economy is still heavily affected, a lot of insights can already be drawn. According to IMF, a key difference between economies when it comes to recovering from the economic crisis the pandemic has caused is the differing speed in vaccine rollouts (IMF, 2021). A much higher share of the populations in advanced economies had been vaccinated by the end of August 2021 than in emerging market economies and low-income countries. The subsequent paragraphs deal with selected areas that are directly relevant for the future of work in Asia and the Pacific, and that were and/or still are severely affected by the pandemic.

Work and COVID-19: who is particularly affected?

Broadly speaking, three groups of workers based on how COVID-19 impacted their work situation, can be classified: those who fell into the group of essential workers (for example, those working in the care and health sector, in food production and production of medical goods); those who could keep their jobs and work remotely (home office work) instead of at the usual workplace; and those who lost their jobs, potentially not just in the short-term (for example, workers in the hospitality business, including the tourist sector) (World Economic Forum, 2020).

Results of Rapid Gender Assessment surveys on the socioeconomic impacts of COVID-19 in 45 countries reveal that, while about a fourth of men and women reported job losses, women of working age living with children were disproportionally more affected than men in the same group (by 29 to 20 per cent). Women in this group were also more likely to report significant increases in unpaid care and domestic work. When it comes to income loss

due to reduced paid working hours, 82 per cent of female own-account workers experienced a reduction in working hours, compared to 65 per cent of male own-account workers. Given this evidence of a clear gender bias of COVID-19 on economic security and the provision of unpaid work, the result was confounded by women being less likely be recipients of cash relief or support from social protection (UN Women, 2021).

Globally, older persons are not only at higher risk of disease and mortality once infected, they also face a range of vulnerabilities related to their work. Older women in particular are often caregivers and health workers, risking exposure to contagion. Many older workers rely on labour income and effects of COVID-19 on income and pensions have hit them severely. Social protection has often been inadequate to protect older persons from such income losses (UN, 2020).

Looking at the characteristics of workers affected disproportionally by the negative impact of the COVID-19 pandemic on the economy and their opportunities to earn a living in countries in Asia and the Pacific, it becomes clear that women, lower-skilled workers and those working in the informal sector were hit particularly hard (ILO, 2021c). Also, those already vulnerable before the pandemic and at risk of poverty – young persons, migrants, persons with disabilities, indigenous and ethnic groups and persons with diverse sexual orientations and gender identities – became even more vulnerable (ILO, 2020a). Overall, there is a risk that the COVID-19 pandemic increases poverty and inequality in the region (ESCAP and ILO, 2021).

As indicated previously, women in the region have been affected more than men. In some countries, more men have died because of COVID-19 than women; yet, socioeconomic data show that women have been hit harder. They have experienced greater job loss effects, have had to provide more additional unpaid care and housework, have suffered from poor mental and physical health, have lacked access to essential services and have faced increased levels of violence (ASEAN and UN WOMEN, 2021).

In instances where employment has not been completely lost, reductions in working hours have often meant a significant loss of income. Income losses have been greater for informal than formal workers. One reason for this is that the service sectors most impacted by lockdowns have been the ones with high shares of informal employment and the need for direct interactions (World Bank, 2020). Working from home, which has been possible for certain other informal jobs, has often not been an option for them. Limited savings and access to other financial means, and sparse coverage by social insurance programmes has made it hard for informal workers and firms to sustain themselves through extended periods of loss in earnings (World Bank, 2020). Kazakhstan has been among the countries that has offered short-term cash benefits to informal workers.

Company size also plays a role: as the example of Thailand shows, many micro and small enterprises in the tourism sector have had to shut down permanently. The country's dependence on this sector has meant that many Thais, also in the middle class, have been at risk of poverty (The Asia Foundation, 2021).

Labour migration in times of COVID-19

Travel restrictions have meant an abrupt reduction of migration between countries worldwide. Those who have lost their jobs and have still been able to travel in many instances have returned to their home countries.[6] In Asia and the Pacific, this has meant noticeable return migration from countries in the region and from other parts of the world and a significant reduction in remittances. Besides many others, this has affected, for example, countries like Cambodia and the Philippines (ILO, 2021c).

[6] The focus here is on international migration. Lockdowns, however, have also affected migration movements within countries where people having previously migrated to rural areas for work have been returning to their hometowns in rural areas.

Disruption of education and loss of educational attainment

Lockdowns, school closures and home schooling have meant breaks and losses in educational attainment for students worldwide. Around 325 million children in Asia and the Pacific have experienced interruptions in their learning experience (UNICEF, 2020). Internet access, presence of information technology equipment and possibilities to participate in remote learning has been unevenly distributed, for example between urban and rural areas and between households with different levels of wealth. In some areas, school closures have also meant missing out on school food programmes.

It remains to be seen how far losses in learning outcomes will be made up for in the coming years. While some children will be able to compensate for the impact of school closures, others might be scarred for the rest of their lives because of permanent shortcomings in education and training. The actual effect on the currently young generation will partly depend on the measures and policies taken by various stakeholders. Disruptions in education and skill attainment have the potential to affect labour supply and human capital formation of the future labour force. Country measures in Asia and the Pacific to recover lost learning have included, for example, the provision of additional school counsellors and psychological support (Armenia and Japan), the adjustment of school calendars to maximize face-to-face teaching time (Papua New Guinea and Tajikistan), the adjustment of curricula (the Philippines) and the implementation of remedial learning programmes (Cambodia). Digital and hybrid learning approaches have been, for example, used in India and Lao People's Democratic Republic (UNESCO, 2021). Some countries have targeted support also towards most disadvantaged and vulnerable children.

The transition from education and training into the labour market is a crucial life-course event. Previous economic crises provide ample evidence of the importance of this transition for the whole life course. Not entering the labour market as planned and experiencing spells of unemployment at the beginning of their career can have life-long consequences for income and employment prospects of young people (ILO, 2020a).

The majority of discussions around education losses because of school closures and/or long-distance learning due to the COVID-19 pandemic focus on primary and higher education. Yet, early foundations for development are being already laid beforehand and particularly those from disadvantaged backgrounds often benefit disproportionally from early childhood education Particularly in countries where the population of working age is already shrinking, the human capital endowment of the now young cohorts is crucial.

It was argued earlier in the context of population ageing and shrinking populations of working age that part of the losses in size and share of the working-age population might be made up for by higher productivity of young cohorts that are better educated than those who retire. This anticipated development might partly be compromised due to the described effect of the COVID-19 pandemic on the education system.

Global supply chains

The COVID-19 pandemic has severely disrupted global and regional supply chains, with severe consequences for those working in affected industries. Production stops due to factory closures in China, for example, have caused shortages of inputs in firms that rely on these inputs, meaning less production further down the chain or even a complete stop in production. This has affected manufacturing in many countries in Asia and the Pacific, showing the impact of external shocks on economies with limited economic diversification, and laying bare the vulnerability of workers with limited social protection. Questions about reshoring or near-shoring have come up in the context of being better prepared for future disruptions (ILO, 2021c). Economies where both manufacturing and tourism are important contributors to GDP have been hit even harder by the COVID-19 pandemic. Examples include

Malaysia, the Philippines and Thailand (ILO, 2021c).

The ILO has compiled a database with country policy responses to COVID-19 by stakeholders like governments, and employers' and workers' organizations. The measures have been introduced to restrict the spread of the disease, to protect those most vulnerable, and to minimize the damage to economies and labour markets (ILO, 2021a).

b. Transition toward a green economy

The core issue when it comes to human production and consumption patterns is that they have to happen responsibly within planetary boundaries in order to be sustainable. Climate change is but one aspect here; others are biodiversity loss and soil depletion. This entails that economic growth as we know it has to change. One of the challenges is to ensure continued development of countries that are still catching up, while at the same time transitioning towards a greener economy. The creation of green jobs will play a central role: they are characterized as being decent jobs that enhance resource efficiency and contribute to economies' and societies' sustainable transformation (ILO, 2019b). This requires reforms to existing education systems to prepare future workers to changing job demands. Upskilling and reskilling workers of any age will be important, too.

A lot of the discussions and recommendations about how to move forward after the COVID-19 pandemic centre on the idea that human production and consumption have to become much more sustainable in every sense: environmentally, economically and socially. "With the COVID-19 pandemic evolving from a public health concern to an environmental and socio-economic crisis, the world is turning to green recovery" (ESCAP, 2021d). Key words in this endeavour are resilience, sustainability and inclusiveness regarding any policies that are being introduced. Through this, the strategy to rebuild economies after the pandemic "greener" is also supporting efforts in the implementation of the 2030 Agenda.

There is often talk of "identifying the sweet spot" when it comes to the economic recovery from the COVID-19 pandemic and the addressing of climate change. The Environment and Development Division of ESCAP defines a sweet spot for green recovery and green growth as the intersection of COVID-19 response actions, the needs of poor people in the Asia-Pacific region, and climate change mitigation and adaptation actions in Nationally Determined Contributions (ESCAP Environment and Development Division, 2020). They identify six areas of action as potential sweet spots. The top sources of carbon emissions for Asia-Pacific economies are the energy sector and land-use change and forestry (ESCAP Environment and Development Division, 2020, p. 10). The other four sectors are surface transport, air travel and tourism, water and waste management, and disaster risk management. For example, in the travel and tourism sector, possible areas for action are a shift towards green travel methods and investments in eco-tourism. While several of the countries in Asia and the Pacific generate a significant share of GDP from this sector, only a handful have explicitly channelled funds for COVID-19 responses to this sector. The analysis of the other sectors also shows that, while policies that qualify as falling into the "sweet spot" have been introduced in the context of the COVID-19 pandemic – most prominently in the sector of disaster risk management – there are many more opportunities that have not (yet) been acted upon. In addition, for those countries with available data, there has been a noticeable mismatch between the financial budgeting for actions in the context of the COVID-19 pandemic and the amount that was budgeted for addressing mitigation and adaptation regarding climate change.

It is important to take a close look at each country's specific context. In the case of Thailand, the country was faced with damaging effects of environmental degradation and natural disasters even before the pandemic struck. In order to transform jobs in the construction and tourism industry into "green jobs", skill needs and gaps have

been identified and recommendations to address future education needs for green growth have been formulated (Esposto, 2016).

Depicting the situation of current green jobs and estimating the potential for future ones is the goal of green job mapping studies. These kind of studies are important for the assessment of circumstances before green growth strategies are designed. They have been performed for a range of countries, for example Bangladesh, Indonesia, Malaysia and the Philippines (ILO, 2014).

c. Fourth Industrial Revolution

The Fourth Industrial Revolution is driven by many new technologies, including robotics, 3D-printing, artificial intelligence, machine learning, biotechnology, blockchain, mobile internet and the Internet of Things (AfDB, ADB, EBRD, IDB, 2018). Early studies that tried to ascertain the effect of automation on job losses seem to have overestimated automation's potentially destructive effects; more in-depth analyses looking at the wider implications of automation, a more detailed appraisal of the cost of replacing labour with robots and machines, and explicit consideration of the creation of new jobs paint a different picture. Some jobs might indeed disappear altogether, but others will only be modified and yet others will be newly created. Important aspects are also productivity gains in one sector that can have positive implications for demand and employment in other sectors. In developing Asia, the risk of job losses in the short- to medium-term seem low because of a concentration of robotics in those sectors with low employment shares (AfDB, ADB, EBRD, IDB, 2018). This would imply that reshoring of jobs in these areas to high-income countries would have very limited repercussions on employment in developing Asia. However, it is clear that, as with any transition that concerns work organization and production processes, workers with different characteristics will be differently affected and their ability to adapt will vary; moreover, (income) inequality between subgroups of workers might widen. There is reason to suspect that the welfare cost of automation varies between countries at different income levels because of less developed and less comprehensive social security systems in developing and emerging economies compared to higher-income ones (AfDB, ADB, EBRD, IDB, 2018).

The number of mobile-cellular subscriptions in Asia and the Pacific per 100 inhabitants is similar to that in Europe and the Americas. This decreases significantly when looking at individuals in Asia that are using the Internet but there still has been a significant increase during the last 15 years (ABDI, OECD, ILO, 2021, p. 62). The picture is similar for fixed broadband subscriptions per 100 people in Asia: a significant increase has occurred since 2005, but levels are still low compared to developed countries (AfDB, ADB, EBRD, IDB, 2018). This has implications for the potential to make use of digital technologies and to participate in digital online platforms (the gig economy). These platforms theoretically allow people to work from any location and can remove the need to migrate. Flexibility in working location and time can also be beneficial for those marginalized in the labour market, for example women, workers with disabilities, refugees or migrant workers (ILO, 2021b). The downsides of these developments become apparent when jobs that are being created this way are not part of social security schemes because employment is happening in the form of self-employment (AfDB, ADB, EBRD, IDB, 2018). While not all jobs on digital platforms are classified as self-employment, the distinction between employment and self-employment is becoming blurred (ILO, 2021b). The regulation and governance of digital platforms in the region varies between countries. Indonesia, New Zealand and the Republic of Korea are countries that have introduced stringent legislation on the ride-hailing industry, an example of a location-based digital labour platform being used. Non-location-based platform sites are much less regulated so far, partly due to questions surrounding worker and social protection that are not easy to resolve (ILO, 2019d).

At the same time, particularly in advanced economies, the spread of broadband Internet

access has for certain professions in the formal sector created the possibility of working remotely, if not completely, for a specified number of days per week, month or year. With rising competition between the private and public sector for workers with specific skills that are in short supply, for example, information technology specialists, teleworking and working-time flexibility are increasingly becoming parts of labour contracts and adding to the attractiveness of jobs. Working remotely brings its own set of challenges for the productivity and well-being of workers (World Economic Forum, 2020).

While technological advances and digital transformations are changing national labour markets and the nature of work, technology is also changing the context and possibilities of labour migration. It is facilitating processes in many ways, for example with regard to planning travel, access to financial resources or information on quality of life and migrant networks in destination countries (ABDI, OECD, ILO, 2021). As with so many topics addressed in this paper, the potential gains from this new trend are unevenly distributed across individuals with different skill levels and those working in different sectors. During the COVID-19 pandemic, digital technology has played a crucial role for migrants when it has come to access to information about lockdowns, staying connected and being able to still send remittances.

d. The impact of and responses to climate change and natural disasters

Disasters and climate change destroy livelihoods, disrupt societies, lead to economic losses, have an impact on health outcomes and increase poverty and inequality. The population in the Asian and Pacific region has long been exposed to natural disasters. Due to progress in country resilience to natural disasters, fewer people are dying. However, a new riskscape is evolving that will require further efforts in disaster risk reduction and management: climate change, natural disasters and biological disasters (like the COVID-19 pandemic) can and do happen simultaneously. They often interact with each other, making the situation more complex and demanding new approaches to increase resilience and reduce vulnerabilities (ESCAP, 2021e). The cascading effects of disasters mean that the impact is being felt in many areas and the damage to infrastructure and property have manifold repercussions that go beyond economic losses. For example, if typhoons or flooding destroy electricity infrastructure, this can severely disrupt the delivery of health-care services.

Older persons are among those that are particularly vulnerable when natural disasters happen. Japan, the region's forerunner in terms of population ageing, is regularly affected by natural disasters. The country has a lot of experience in including older persons in disaster risk reduction planning and evacuation drills, which can provide important insights for other countries in the region (ESCAP, 2017b). Other examples are the aim to prioritize older persons in risk reduction plans in Bangladesh and to ensure that they are included in disaster contingency plans in Myanmar (UNFPA, 2017). Both efforts are part of the countries' respective national plans on ageing.

However, older persons are not only victims in environmental and climatic change, they are also actors. Their engagement can happen at various levels. On the one hand, they can support government actions in combating and reacting to climate change (the national level). On the other hand, they – individually or through associations of older persons or other volunteer groups – can promote and be a part of concrete actions themselves (the local and community level) (ESCAP, 2021g). Examples include initiatives that tap into the vast experience and professional knowledge of older persons, which can be beneficial for improving environmental quality at the local level. As with any strategy that tries to engage people from various backgrounds, it is important to respond to different resource levels of individuals and communities. For instance, when online access is limited, face-to-face interaction is important for broader potential engagement.

The COVID-19 pandemic has shown that emergency social protection schemes can

provide quick support. Rather than relying on emergency responses in the case of shocks, vulnerabilities due to disasters could be better avoided if social protection programmes were shock-prepared and included measures that made populations more resilient to begin with (ESCAP, 2021e). The livelihoods of many people in the region are weather-dependent. Their income situation is directly affected by climate change. Adequate social protection policies can make them more resilient through greater preparedness and better protection in case of shocks (ESCAP and ILO, 2021). An example of a government programme that offers emergency employment for displaced workers was introduced in the Philippines in 2009. It goes beyond distributing cash by additionally offering social protection and health insurance, as well as providing support in acquiring new skills (ILO, 2019a).

5. Conclusions and recommendations

The populations in Asia and the Pacific are ageing. This change in population age structure is the result of past and ongoing fertility reductions and increases in life expectancy. Initially, reductions in fertility raise the share of the population of working age while the share of the older population is still relatively low. Persistent low fertility leads to a situation in which the share of the working-age population starts to decrease while the share of the older population increases.

Countries in the Asia-Pacific region are experiencing different phases of population ageing. In those with persistent low fertility, how to react to labour shortages and to ensure the sustainability of social security systems are fundamental questions. During the coming decades, more and more countries in the region will be facing these challenges, given their ageing populations. However, their populations are not only ageing, at the same time they are becoming more educated, given past and ongoing shifts in educational attainment towards higher qualifications. This significant change has likely far-reaching positive implications for future labour supply and health outcomes.

It is happening while the Fourth Industrial Revolution is taking place. In addition, environmental and climatic changes are shaping the future of work, and the transition to a green economy is requiring new approaches to production and consumption. Addressing opportunities and challenges of the future of work requires policy responses that adapt to these manifold demographic, economic, technological and environmental changes. These changes are also interdependent in many ways and the COVID-19 pandemic has been influencing them further. The resilience of persons of any age is key to deal with such changes and challenges. Since different subgroups of populations show different levels of vulnerability, policies that cater towards their different needs are called for.
The COVID-19 pandemic and the disruptions it has caused in people's lives, labour markets and the regional economy have aggravated many existing challenges and reversed several development gains. At the same time, the pandemic has sped up ongoing developments when it comes, for example, to digitalization and opportunities for "green recoveries".

The following recommendations are based on the analyses of this paper:

Strengthen social protection in preparation for population ageing and future crises

Events like the COVID-19 pandemic are hard if not impossible to predict. Now that countries in Asia and the Pacific have faced COVID-19, they are in many respects better prepared in case of a similar future event. While the next pandemic or other crisis might be different in crucial regards, certain changes that have taken place in the world of work and related to social security in the course of the COVID-19 pandemic will help in dealing with future crises. A general observation is that countries with established social protection schemes are better equipped to react to unforeseen crises and to provide support than those that set them up on an ad-hoc basis. Still, those ad-hoc protection measures provide important support and the design of such measures should be evaluated and, where deemed appropriate, become permanent parts of social protection schemes. This applies, for example, to recent schemes that have been quickly introduced to react to rapid increases in unemployment and losses of income.

While past economic growth in the region has created jobs, many of these have been in the informal economy. In order for people and societies to deal with population ageing, it will be crucial to transition towards more decent jobs that provide universal social protection throughout the life course. The path towards achieving this depends on the existing level of coverage and the socioeconomic context in each country. With expected increases in the number of labour migrants in countries with labour shortages due to population ageing, their coverage in social protection schemes

should receive attention in a greater number of countries.

Globally speaking, rises in educational attainment have been associated with decreases in informal and increases in formal employment. In the Asia-Pacific region, there is no reason to suspect why this general trend should not also apply to those countries and contexts with still relatively high levels of informal employment. Still, this is not an automatic process. For example, depending on the organization of work on digital platforms, formal or informal job arrangements could be created and it would depend on national labour market regulations and social policies how this could play out. Some countries are leading the way with newly-introduced labour laws that aim at protecting work on digital platforms.

Affordable health-care systems are a core component of social protection, and health and healthy ageing are essential issues in ageing populations from the individual as well as the societal perspective. ICT has much potential to promote and enhance accessibility and quality of health and long-term care for older persons, in particular when they have to manage chronic diseases. While health is a crucial aspect of well-being of older persons, providing individuals with access to affordable, quality health care at any stage of the life course also has important implications for societies overall, due to its close connection to macroeconomic aspects like labour supply and the sustainability of social support systems.

Promote life-long education and training

High-quality education and life-long learning will make workers more resilient to ongoing and future labour market changes and challenges and promote their employability throughout their working lives. With ongoing labour market changes, like digitalization and the transition towards green economies, it is of utmost importance to equip the young population with quality education that prepares them for labour markets with quickly changing skill demands. They will, on average, much more than past or present generations of workers, be required to reskill and upskill in the course of their working lives. The fact that many countries still have large shares of their workforce engaged in the informal economy requires that education and training policies are designed having all groups of workers and their realities in mind.

While the demand for skilled workers is projected to increase, not only tertiary educated graduates will be needed, so too will be skilled workers with technical vocational education and training. Specific demands for skills vary widely based on the structures of country labour markets. In some countries, there are severe mismatches between skill demands and the skills of workers. While education should not just be a means to an end to fulfil labour demand, designing curricula that reflect the skills that are needed in labour markets is likely to benefit both students and employers.

Given the strong associations between education and people's opportunities and social and economic situations, investments in quality education for all (SDG 4) pays off not just for individuals but for societies at large. A related aspect concerns the skills development of migrants and the enhanced recognition of foreign qualifications, education and skills.

Take a life-course approach

The call to take a life-course approach applies to all policy areas that are touched upon in this paper. Since advantages but also disadvantages accumulate over the life course, the social and economic situation of older persons is largely the result of what occurred earlier in their lives, starting from childhood and throughout working ages. This means that policies covering a wide range of areas and concerning children and adults of any age have an impact of the situation of future older persons in the region.

Poverty and deprivation in childhood can have adverse consequences for educational outcomes, cognitive development and employment throughout the whole life course. Missed opportunities for investments in children are hence detrimental to individuals and society overall. Likewise, social

protection during working age is crucial for older persons' health status, their income situation and the possible extension of working lives.

There is a gender dimension to this: while men and women are in many regards exposed to similar risks and situations in old age, there are aspects that affect women to a larger extent and/or in more severe ways than men and make them economically and socially more vulnerable. Often, these vulnerabilities in old age are the outcome of life-course disadvantages, for example due to women's higher representation in informal employment, their principal role in the provision of unpaid care work and consequently lower income throughout the life course and in old age.

Remove barriers to work

There are various existing barriers to remain in or to take up paid work. Discrimination based on age or other characteristics of workers hinders access to employment opportunities in an equitable manner and has a detrimental impact on sustainable development; it should be done away with. Differences between male and female participation in paid work are testimony to existing disincentives on both the labour supply and demand side. Well-designed maternity, paternity and parental leave policies can increase gender equality so that parents can share childcare responsibilities and women have fewer barriers to participate in the labour force. This is tied to the existence of decent jobs that provide social protection – highlighting the multiple benefits of having social protection systems in place.

The extension of working lives in the context of population ageing requires both the improvement of incentives to work from the worker's perspective and the removal of barriers to invest in, retain and hire older workers from the employer's perspective. A common measure to enhance incentives to work longer are increases in statutory retirement ages. While often successful in increasing employment rates among older persons, such measures have to incorporate mechanisms that take differences in individual ability to work longer into account.

Promote inclusion of relevant stakeholders and cross-sectoral policymaking

As described throughout this paper, many policies concerned with the future of work in the context of population ageing focus on, for example, education or labour market policies. Rather than dealing with each policy area independently, cross-sectoral policy making has the advantage that the resultant policies can complement and reinforce each other.

There is evidence that the involvement of all relevant stakeholders – governmental as well as non-governmental – in the process and design of social protection schemes has led to good results. Combining the perspectives, insights and needs of various groups early in the process can lead to more comprehensive and tailored policies compared to processes that do not follow such comprehensive approaches.

Often, policies that have proven successful in one country are considered for implementation in another country. While this has potential merits, it can also lead to pitfalls in cases where the differences in context are not adequately considered and policies not appropriately adapted. This includes differences in jurisdiction between levels of government and factors like good governance, strong institutions, accountable stakeholders and the efficient allocation of resources – all of which are relevant to the outcome and often differ significantly between settings.

Enhance the provision of disaggregated data for evidence-based policymaking

No matter what the topic in question is: a comprehensive understanding of the issue and related aspects is required in order to adequately react to it in the form of evidence-based policymaking. Such a comprehensive understanding of an issue usually requires a range of data and statistics, as well as additional information from relevant stakeholders. For instance, for the foresighted planning of education and labour market policies, having up-to-date data on skill

developments and job demands is a fundamental input.

Aggregate statistics on labour force participation, educational attainment, poverty or access to social protection schemes hide differences in outcomes for subgroups of the population. In order to identify vulnerabilities and needs of specific population groups, it is necessary to have data and information broken down by the characteristics of these groups. For example, to be able to analyse in what areas men and women are experiencing different outcomes when it comes to topics that are important for the future of work, it is crucial to produce and provide gender-specific statistics. Gender is just one of the many characteristics by which data should ideally be disaggregated. Disability status is another important characteristic that often is not part of data collection and, consequently, data availability. More dimensions should be added, wherever appropriate, for example migratory status and ethnicity. Finally, the differentiation between urban and rural areas, or the regional disaggregation of data, can provide vital insights in the spatial distribution of phenomena.

Ways forward

While there are various challenges to be tackled in the context of ongoing and future demographic, economic, technological and environmental changes, addressing them offers opportunities for sustainable development and to build "a just and equitable future of work" (ILO, 2019e, p. 13). The COVID-19 pandemic has aggravated some existing issues and inequalities. However, it has also provided potential for "a 'sweet spot' for green recovery – where COVID-19 responses, climate change action and poverty reduction can converge" (ESCAP Environment and Development Division, 2020, p.1).

Appendix

Table 3: ESCAP members and associate members, by subregion

East and North-East Asia	North and Central Asia	Pacific	South-East Asia	South and South-West Asia
China	Armenia	American Samoa	Brunei Darussalam	Afghanistan
Democratic People's Republic of Korea	Azerbaijan	Australia	Cambodia	Bangladesh
Hong Kong, China	Georgia	Cook Islands	Indonesia	Bhutan
Japan	Kazakhstan	Fiji	Lao People's Democratic Republic	India
Macao, China	Kyrgyzstan	French Polynesia	Malaysia	Iran (Islamic Republic of)
Mongolia	Russian Federation	Guam	Myanmar	Maldives
Republic of Korea	Tajikistan	Kiribati	Philippines	Nepal
	Turkmenistan	Marshall Islands	Singapore	Pakistan
	Uzbekistan	Micronesia (Federated States of)	Thailand	Sri Lanka
		Nauru	Timor-Leste	Turkey
		New Caledonia	Viet Nam	
		New Zealand		
		Niue		
		Northern Mariana Islands		
		Palau		
		Papua New Guinea		
		Samoa		
		Solomon Island		
		Tonga		
		Tuvalu		
		Vanuatu		

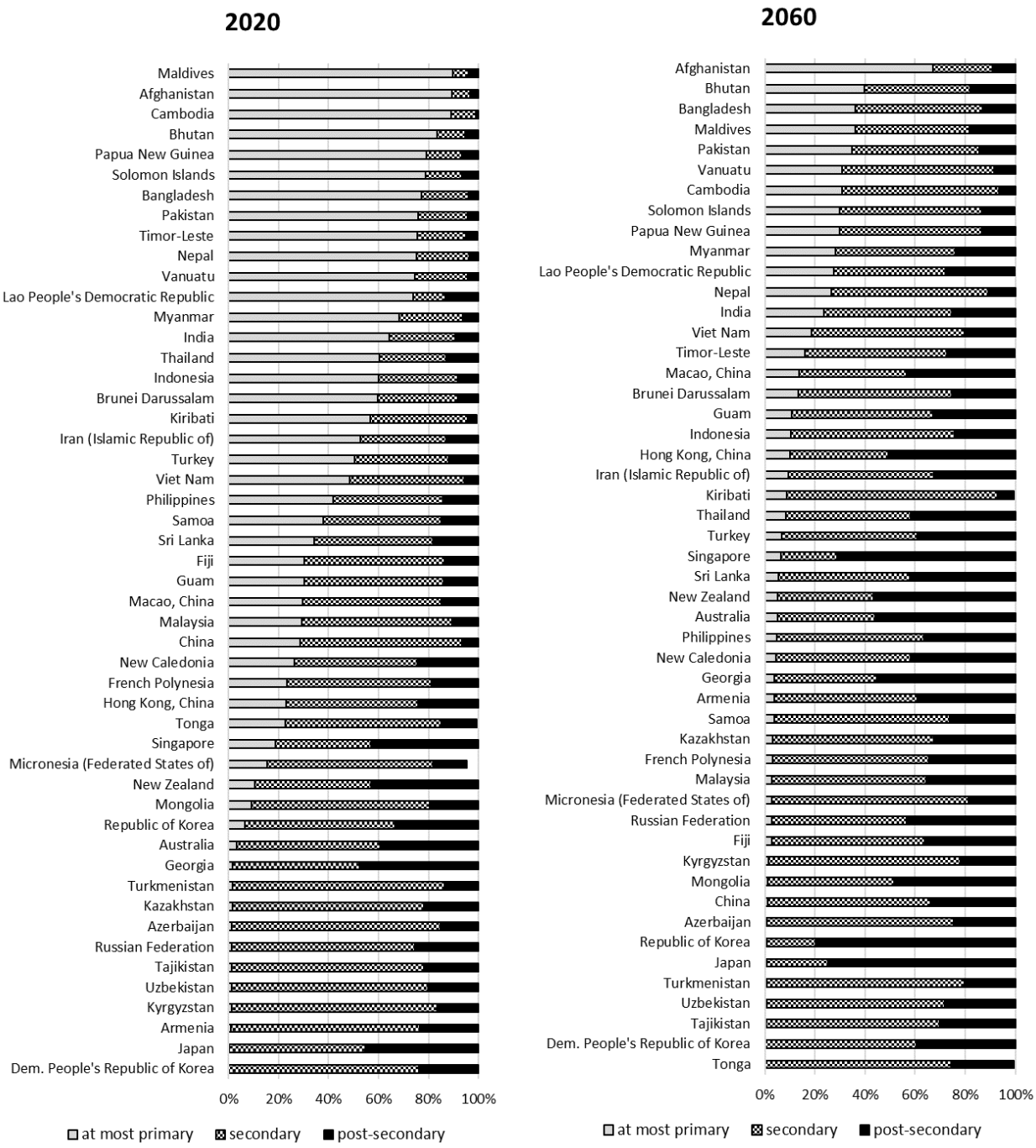
Note: 53 member countries plus 9 associate countries; France, the Netherlands, the United Kingdom of Great Britain and Northern Ireland and the United States of America are excluded).

Table 4: Total fertility rate (TFR), male and female life expectancy in 2015/2020; share population aged 15–64 and 65+ (percentage), 2020, 2040 and 2060, in Asia-Pacific countries

Country	TFR	LEx Male	LEx Female	Share pop. 15–64			Share pop. 65+		
				2020	2040	2060	2020	2040	2060
Afghanistan	4.6	62.9	65.8	56	65	69	3	4	8
Armenia	1.8	71.1	78.3	67	66	58	12	18	27
Australia	1.8	81.2	85.2	64	62	59	16	21	24
Azerbaijan	2.1	70.3	75.3	70	68	62	7	15	22
Bangladesh	2.1	70.5	74.1	68	70	64	5	11	21
Bhutan	2.0	71.0	71.6	69	72	63	6	11	23
Brunei Darussalam	1.8	74.5	76.9	72	68	60	6	16	26
Cambodia	2.5	67.2	71.5	64	67	65	5	8	15
China	1.7	74.5	79.0	70	62	56	12	24	30
Hong Kong, China	1.3	81.8	87.5	69	56	50	18	31	36
Macao, China	1.2	81.1	87.0	74	63	53	12	25	33
Dem. People's Republic of Korea	1.9	68.3	75.4	71	64	62	9	18	22
Fiji	2.8	65.6	69.1	65	66	66	6	9	12
French Polynesia	2.0	75.3	79.7	69	64	60	9	19	25
Georgia	2.1	69.1	77.9	65	63	59	15	20	24
Guam	2.3	76.5	83.3	66	62	61	11	18	22
India	2.2	68.1	70.5	67	68	66	7	11	17
Indonesia	2.3	69.3	73.6	68	66	64	6	13	18
Iran (Islamic Republic of)	2.2	75.3	77.6	69	68	58	7	14	25
Japan	1.4	81.3	87.5	59	54	50	28	35	38
Kazakhstan	2.8	68.8	77.4	63	65	62	8	13	17
Kiribati	3.6	63.9	72.0	60	63	63	4	7	11
Kyrgyzstan	3.0	67.2	75.4	63	65	64	5	9	13
Lao People's Democratic Republic	2.7	65.7	69.2	64	69	67	4	8	14
Malaysia	2.0	74.0	78.1	69	68	62	7	13	22
Maldives	1.9	77.1	80.4	77	74	56	4	12	32
Micronesia (Fed. States of)	3.1	66.1	69.4	64	66	67	4	7	11
Mongolia	2.9	65.5	73.8	65	66	63	4	10	15
Myanmar	2.2	63.7	69.8	68	68	67	6	11	15
Nepal	1.9	68.8	71.7	65	71	67	6	10	19
New Caledonia	2.0	74.7	80.2	68	64	62	10	18	22
New Zealand	1.9	80.3	83.8	64	60	59	16	23	26
Pakistan	3.6	66.1	68.0	61	66	67	4	6	10
Papua New Guinea	3.6	62.9	65.5	61	64	66	4	5	8
Philippines	2.6	67.1	75.3	64	67	66	6	10	15
Republic of Korea	1.1	79.6	85.7	72	57	49	16	33	41
Russian Federation	1.8	66.8	77.5	66	64	58	16	21	25
Samoa	3.9	71.1	75.2	58	61	63	5	9	10
Singapore	1.2	81.3	85.5	74	60	53	13	29	36
Solomon Islands	4.4	71.1	74.6	56	60	62	4	6	8
Sri Lanka	2.2	73.3	80.1	65	62	59	11	19	24
Tajikistan	3.6	68.6	73.1	60	62	63	3	6	10
Thailand	1.5	73.1	80.6	70	61	56	13	26	31
Timor-Leste	4.1	67.2	71.3	59	64	67	4	6	9
Tonga	3.6	68.8	72.7	59	62	65	6	8	10
Turkey	2.1	74.3	80.2	67	65	60	9	16	24
Turkmenistan	2.8	64.5	71.5	64	67	65	5	9	13
Uzbekistan	2.4	69.4	73.6	66	68	65	5	10	16
Vanuatu	3.8	68.8	71.9	58	63	64	4	5	8
Viet Nam	2.1	71.2	79.4	69	66	58	8	16	25

Source: UN DESA 2019b; Asia-Pacific region countries, due to data availability without American Samoa, Cook Islands, Marshall Islands, Nauru, Niue, Northern Mariana Islands, Palau and Tuvalu.

Figure 9: Education composition of the population aged 50–64, 2020 and 2060, Asia-Pacific countries, sorted by share with at most primary education



Source: Wittgenstein Centre for Demography and Global Human Capital, 2018, GET (Global Education Trend) education scenario; Asia-Pacific region countries, due to data availability without American Samoa, Cook Islands, Marshall Islands, Nauru, Niue, Northern Mariana Islands, Palau and Tuvalu; author's own calculations.

Table 5: Labour force participation rate by sex, for persons aged 60–64, in Asia-Pacific countries, 1990, 2000 and 2019

Country	Women			Men		
	1990	2000	2019	1990	2000	2019
Afghanistan	7.4	7.5	8.8	56.8	57.2	56.6
Armenia	45.4	45.4	42.0	65.6	65.6	62.9
Asia and the Pacific	28.7	34.0	34.4	70.6	67.5	64.4
Asia and the Pacific: High income	36.0	37.1	52.2	67.9	67.1	75.8
Asia and the Pacific: Low income	51.9	48.8	45.5	73.7	76.0	74.2
Asia and the Pacific: Lower-middle income	25.0	25.5	20.9	78.6	74.0	67.0
Asia and the Pacific: Upper-middle income	29.0	39.2	40.9	65.6	62.9	60.5
Australia	16.0	21.5	52.0	50.7	46.6	65.4
Azerbaijan	21.4	20.5	28.1	70.1	83.3	34.9
Bangladesh	20.5	21.6	19.5	85.6	83.9	77.7
Bhutan	52.3	54.3	65.0	76.5	75.7	75.4
Brunei Darussalam	13.2	11.4	21.2	71.1	48.2	31.1
Cambodia	58.9	57.5	71.0	78.7	80.3	79.5
China	27.3	38.9	41.2	63.2	60.4	58.8
Fiji	33.5	30.5	24.4	70.8	69.2	61.9
French Polynesia	14.1	13.6	15.8	25.6	23.9	25.2
Georgia	57.8	54.8	59.0	79.1	78.8	77.0
Guam	33.9	34.0	33.9	65.1	65.3	65.5
India	22.6	22.5	14.6	79.3	73.2	66.1
Indonesia	43.1	48.9	50.9	78.9	78.9	77.5
Iran, Islamic Republic of	3.9	6.3	6.8	82.1	68.7	41.7
Japan	39.5	39.5	59.9	72.9	72.6	84.4
Kazakhstan	29.5	24.6	19.8	52.4	50.0	54.6
Korea, Democratic People's Republic of	63.4	60.1	60.4	81.3	82.3	82.2
Korea, Republic of	43.5	46.1	52.1	67.2	63.6	75.5
Kyrgyzstan	25.7	28.3	24.3	43.3	56.5	63.1
Lao People's Democratic Republic	42.4	48.2	59.7	74.4	74.5	75.0
Malaysia	18.9	19.7	22.7	54.9	54.6	49.3
Maldives	22.1	40.6	31.6	75.0	75.4	63.3
Mongolia	21.2	20.8	22.2	37.0	37.3	32.2
Myanmar	14.0	17.6	21.0	68.5	65.5	59.7
Nepal	69.2	70.0	75.4	90.0	89.9	88.6
New Caledonia	24.5	24.5	24.4	35.3	35.2	35.5
New Zealand	16.7	33.5	67.0	34.7	59.7	80.1
Pakistan	10.6	16.4	16.6	78.5	76.5	68.7
Papua New Guinea	64.5	66.1	43.2	73.3	72.6	39.1
Philippines	48.2	48.6	46.0	76.5	76.4	67.6
Russian Federation	22.2	20.9	27.5	41.8	36.1	41.1
Samoa	17.4	18.0	19.1	45.6	45.2	44.5
Singapore	12.3	19.0	49.5	47.1	53.0	75.7
Solomon Islands	81.6	81.4	82.3	91.9	92.0	91.8
Sri Lanka	23.4	20.3	27.2	69.6	61.3	68.1
Tajikistan	18.0	18.0	18.4	55.9	55.9	50.4
Thailand	46.5	48.0	45.0	74.3	73.9	66.4
Timor-Leste	71.3	72.1	74.0	88.9	88.7	88.2
Tonga	30.9	46.5	34.8	83.2	75.3	55.1
Turkey	22.2	18.6	15.7	54.8	47.8	44.8
Turkmenistan	21.3	22.9	19.7	52.9	54.7	51.1
Uzbekistan	24.1	25.0	21.4	55.8	56.4	53.0
Vanuatu	60.0	60.8	60.9	81.6	81.4	81.4
Viet Nam	47.8	52.6	52.9	67.6	65.9	63.2

Source: ILOSTAT, 2021. ILO modelled estimates, Nov. 2020 (per cent) – Annual, for available countries.

Table 6: Labour force participation rate by sex, for persons aged 65+, in Asia-Pacific countries, 1990, 2000 and 2019

Country	Women			Men		
	1990	2000	2019	1990	2000	2019
Afghanistan	4.8	4.9	3.1	35.4	36.3	29.7
Armenia	1.3	1.3	1.1	4.3	4.3	3.5
Asia and the Pacific	11.3	15.6	14.5	41.1	39.6	32.8
Asia and the Pacific: High income	14.1	13.5	17.8	31.5	30.0	32.9
Asia and the Pacific: Low income	26.9	24.4	22.9	47.4	47.7	45.4
Asia and the Pacific: Lower-middle income	12.2	12.6	9.6	52.2	47.8	36.2
Asia and the Pacific: Upper-middle income	9.6	17.8	16.5	35.9	36.4	30.4
Australia	2.4	3.0	11.0	9.2	9.9	19.0
Azerbaijan	6.8	12.4	4.0	12.8	22.6	9.5
Bangladesh	13.9	13.9	8.8	68.4	62.3	46.0
Bhutan	36.1	35.9	26.6	62.0	57.9	43.7
Brunei Darussalam	4.3	2.3	10.1	32.8	14.5	14.0
Cambodia	24.2	22.4	35.5	44.8	46.0	55.1
China	8.0	17.3	15.4	32.7	33.8	27.6
Fiji	22.7	19.3	13.6	51.7	50.7	41.1
French Polynesia	5.8	3.6	4.3	11.5	9.1	8.9
Georgia	44.2	42.7	33.3	60.2	60.2	47.7
Guam	11.4	11.7	11.8	36.2	35.1	34.3
India	10.4	10.3	6.5	52.8	47.1	34.5
Indonesia	24.6	29.4	31.7	56.8	59.0	57.7
Iran, Islamic Republic of	3.7	3.4	2.8	64.4	48.2	25.4
Japan	16.2	14.4	18.0	36.5	34.1	34.8
Kazakhstan	11.1	12.6	3.4	18.8	21.9	6.0
Korea, Democratic People's Republic of	32.1	29.4	29.7	53.3	54.2	54.2
Korea, Republic of	18.4	22.7	27.8	39.3	40.6	45.0
Kyrgyzstan	7.1	12.8	7.9	15.7	26.6	16.6
Lao People's Democratic Republic	19.3	20.2	22.0	46.9	43.8	37.1
Malaysia	10.5	11.2	12.0	44.3	42.5	39.9
Maldives	13.5	25.8	20.4	51.8	51.9	30.9
Mongolia	10.8	10.5	7.7	21.7	21.9	14.7
Myanmar	5.6	6.9	7.4	30.6	30.0	23.6
Nepal	40.9	40.2	37.7	68.1	66.9	57.4
New Caledonia	3.3	3.2	3.3	7.7	7.8	7.4
New Zealand	3.6	4.5	19.4	10.3	11.8	29.6
Pakistan	7.4	10.5	8.3	51.7	51.7	40.4
Papua New Guinea	46.9	48.5	21.6	60.0	59.4	23.6
Philippines	27.2	28.9	25.6	59.3	55.7	42.5
Russian Federation	4.7	5.1	5.2	8.9	10.3	8.5
Samoa	6.4	6.7	7.2	20.0	19.7	19.1
Singapore	3.3	5.0	19.6	18.2	21.2	38.5
Solomon Islands	53.2	52.9	54.2	67.8	67.9	67.6
Sri Lanka	8.3	5.2	11.7	38.7	30.4	36.7
Tajikistan	6.2	6.2	2.4	18.7	18.7	7.9
Thailand	12.5	13.3	17.3	35.4	33.9	33.4
Timor-Leste	56.2	57.1	59.2	72.4	72.1	71.6
Tonga	15.4	22.0	13.9	57.1	53.8	33.8
Turkey	9.3	11.3	5.6	30.9	32.5	20.1
Turkmenistan	7.4	7.9	6.8	17.3	17.8	16.7
Uzbekistan	8.4	8.7	7.4	18.2	18.4	17.3
Vanuatu	48.5	49.2	49.3	69.6	69.3	69.3
Viet Nam	17.6	20.2	20.8	36.3	35.1	31.4

Source: ILOSTAT, 2021. ILO modelled estimates, Nov. 2020 (per cent) – Annual, for available countries. Since there imputed observations are not based on national data, they are subject to high uncertainty. They should not be used for country comparisons or rankings but rather for comparisons of overall levels and trends.

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