

## Technology for Population Ageing in North-East Asia

### Introduction

The East and North-East Asia (ENEA) subregion is home to a high share of the world's older persons. Around 200 million people in ENEA are aged 65 or above, a testament to the improvements in prosperity and health services this subregion has experienced in recent decades. ENEA accounts for one third of all older persons (aged 65 or over) in the world according to the United Nations Population Division.<sup>1</sup> Achieving the Sustainable Development Goals (SDGs) will therefore require careful attention on the opportunities and challenges of population ageing.

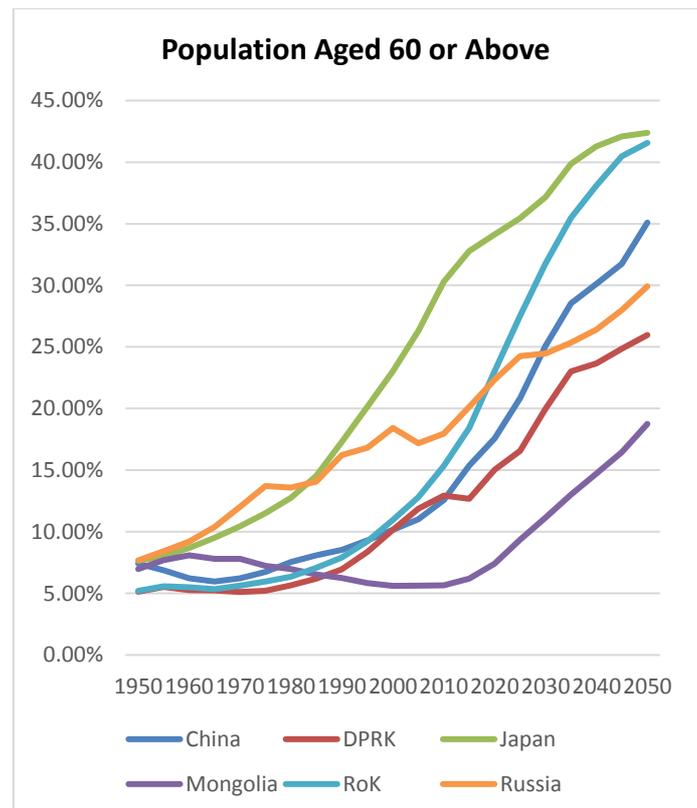
Three countries within the subregion are particularly noteworthy, China has the largest population of older persons in the world, Japan has the highest percentage of older persons in the world, and the Republic of Korea has the highest rate of population ageing in the world.

### SDGs and population ageing

Sustainable Development Goals are universal and therefore covers all countries and all age groups within each country. As the 200 million older persons in ENEA increase to 300 million by 2030, achieving the SDGs in ENEA will be significantly shaped by older persons.

Looking forward even longer, projections from the UN shows that by 2050, more than 40% of the population will be aged 60 or above in Japan and Republic of Korea, while the rate is above 35% in China, and lower rates elsewhere in the subregion. The chart on the right demonstrates the rapid pace of change that member states will experience in the forthcoming decades.

Population ageing in ENEA so far has coincided with a drastic reduction in the number of people living in poverty. This has partly been the result of the demographic dividend as dependency ratios decreased and workers contributed to economic growth across ENEA. As society



(Source: UN DESA, World Population Prospects 2017 Revision)

ages and the dependency ratios increase, there is a risk that poverty will rise again, and inequality will be exacerbated. The poverty rate (based on 50% of median income) among older persons aged over 65 years in Japan is 19.4% and in the Republic of Korea is 49.6%, while OECD average is 12.4% according to the OECD.<sup>2</sup> This will significantly impact the achievement of SDG 1 and 10.

Transfer payments such as pensions, are a key government measure that can alleviate old age poverty, particularly for older persons without employer provided pensions or a large amount of personal capital. However, as population ageing affects more and more workers, the potential pressures on government's fiscal position will be significant.

<sup>1</sup> United Nations, "World Population Prospects", 2017.

<sup>2</sup> OECD, "Pension at a Glance", 2017.

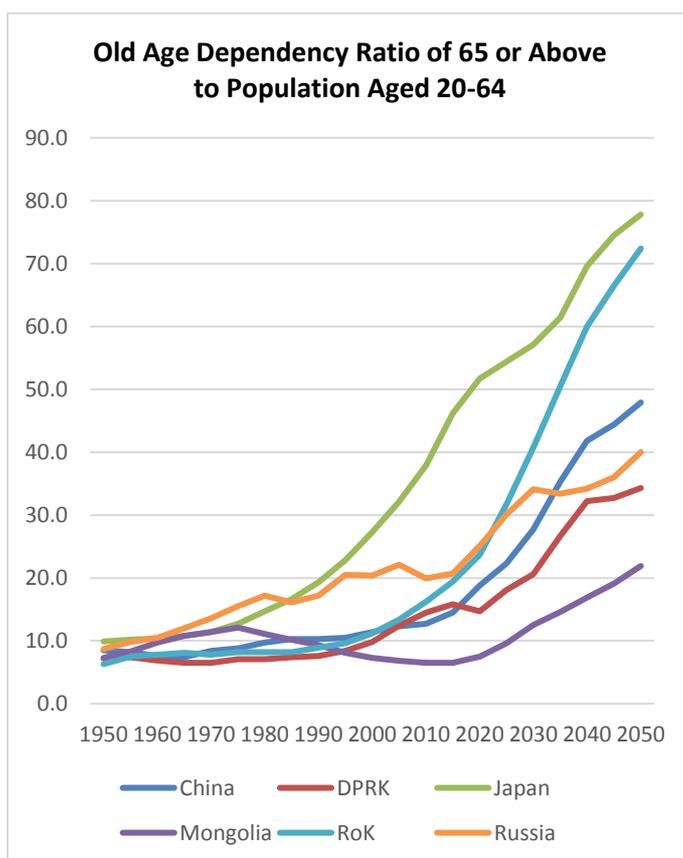
In China, Japan and the Republic of Korea, spending on transfer payments, age related healthcare and long-term care are expected to rise based on the pace of population ageing. The table below outlines the drastic increases that are forecasted for China and Korea. Japan, already spending more will see a more modest rise.

**Total Age-related Spending (% of GDP)**

	2010	2020 (f)	2030 (f)	2040 (f)	2050 (f)
China	5.4	7.6	10.5	12.7	15.1
Japan	18.2	19.2	19.3	20.4	21.3
Republic of Korea	6.6	9.9	15.0	21.2	27.4

(Source: Standard and Poors, 2013)<sup>3</sup>

As the fiscal pressures on governments rise due to increased demand for social protection expenditure, the dependency ration of older persons to the working age population is also projected to rise as the working age population shrinks in a number of countries due to below replacement level birth rates. A reduction in the working age population may threaten many of the key revenue generating taxes that governments rely on to fund other services.



(Source: UN DESA, World Population Prospects 2017 Revision)

Though the dependency ration is projected to rise in all countries, potentially affecting SDG 1, 8, and 10, a decline

in the labour force can mitigated against if policies were adopted to enable older persons to stay active in the labour force and to increase the number of women in the labour force. These policies could be aided by technologies mentioned in the next section to enable more people to be employed in flexible arrangements, and promote the achievement of SDG 5 and SDG 10.

Health care and long-term care is another area that population ageing will impact the SDGs. In countries such as Japan, Republic of Korea and China where many working age people migrate to large cities, older persons may not be able to rely on their children to provide long-term care as many still reside outside in smaller towns or rural areas. Improving service delivery to all older persons so that they can receive care in their older age will be crucial to the achievement of SDG 3. This is another area in which technology can contribute to a more efficient service delivery.

**Technology and smart ageing**

Smart ageing refers to the concept of utilizing technologies and innovation, including technologies arising from the 4<sup>th</sup> industrial revolution – such as big data, internet of things and artificial intelligence, and applying them to improve the quality of life of elderly people. This can include a broad array of products and services that improve the delivery of healthcare services to elderly people, as well as ways of leveraging technology to enable elderly people to continue actively engaging in economic, social and political life. The objective of smart ageing is to improve the quality of care whilst lowering costs by leveraging improvements in productivity through technology and connectivity.

Countries in East and North-East Asia region has already begun utilising technologies such as telephone and videoconference tools to deliver medical consultations and to monitor the health of patients without the patient physically being present at the hospital. The expansion of mobile telephone and broadband internet offers the opportunity for health providers to expand the channels in which services can be delivered. The following are some potential applications that some member states are piloting or exploring.

The increasing proliferation of the Internet of Things (IoT) offers the opportunity to utilize connected devices to enhance Ambient Assisted Living (AAL) of elderly people.<sup>4</sup> Devices connected to a secure network can monitor and transmit information to relevant health professionals remotely, enabling more elderly people to live in communities rather than in an institution without sacrificing professional monitoring of health conditions.<sup>5</sup> Devices can also monitor medication intake and alert

<sup>3</sup> Standard and Poors, “Global Aging 2013: Rising to the Challenge”, 2003

<sup>4</sup> A. Dohr, R. Modre-Opsrian, M. Drobits, D. Hayn and G. Schreier, “The Internet of Things for Ambient Assisted Living,” 2010

Seventh International Conference on Information Technology: New Generations, Las Vegas, NV, 2010, pp. 804-809.

<sup>5</sup> E. I. Konstantinidis, G. Bamparopoulos, A. Billis, and P. D. Bamidis, “Internet of Things for an Age-Friendly Healthcare”, MIE, 2015, pp. 587-591.

health professionals or emergency services when conditions of the patient changes.

The ability for elderly people to obtain health monitoring remotely whilst living in the community and potentially working can improve their level of social connectedness while reducing costs associated with institutionalized care.

The related technology of big data and analytics, increasingly used in health care delivery, can also be applied in aged care.<sup>6</sup> Techniques such as analyzing large quantities of data to identify the most effective health promotion and prevention interventions and the best course of treatment can be utilized in the context of aged care. Using big data to personalize care delivery and plan out care over a longer period of time could prevent illnesses, improve success rates, and reduce health care costs.<sup>7</sup>

In addition to enabling older persons to live in communities and use technology to prevent ill health, technology can also increase the participation of older persons in economic, social and political spheres of life.

Combined with increasing flexibility in many workplaces, current technology already enables older persons to work from outside of the office.<sup>8</sup> The expansion of cloud computing and expansion of broadband will remove additional barriers for flexible and remote working arrangements. Retaining older persons in the labour force can have the dual effect of improving the quality of life of older persons and reducing the fiscal pressures on social insurance programmes.

As technologies develop, it is also important however to ensure that the technology is used to promote the rights of older persons rather than infringe on their human rights. Making technology appropriate and accessible to older persons and building up the capacity of older persons to fully utilize these technologies will be important to avoid a generational divide on the benefits that new technologies can provide. In addition, the infrastructure that these technologies rely on will also need to be available where older persons live. Lastly the human rights of older persons, including the right to privacy, and informed consent are critical factors in the design and deployment of new technologies.

*The ENEA Policy Briefs aim at providing a subregional-level review on common challenges and opportunities, and generating forward-looking discussions among key stakeholders. The views and options expressed in the briefs are the author's own and do not necessarily reflect the official policy of the UN. ESCAP East and North-East Asia Office welcomes proposals from officials and experts for the Briefs. For further information, please contact the Office ([escap-sroenea-registry@un.org](mailto:escap-sroenea-registry@un.org)).*

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<sup>6</sup> D. W. Bates, S. Saria, L. Ohno-Machado, A. Shah and G. Escobar, "Big Data in Health Care: Using Analytics to Identify and Manage High-Risk And High-Cost Patients", *Health Affairs*, vol 33:7, 2014, pp. 1123-1131.

<sup>7</sup> *Ibid.*

<sup>8</sup> R. J. Burke, C. L. Cooper, A-S. G. Antoniou, *The Multi-generational and Aging Workforce: Challenges and Opportunities*, 2015, p. 293



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